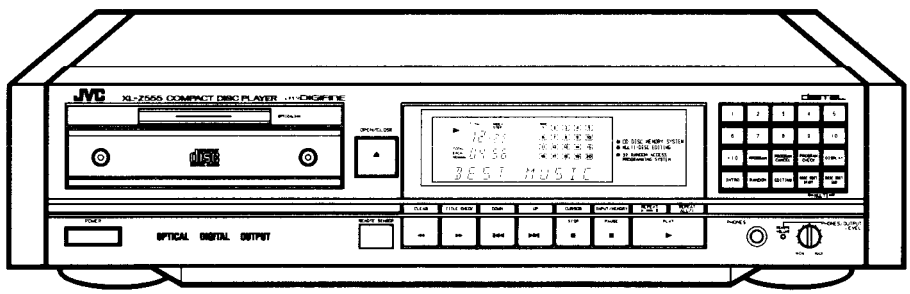
JVC

SERVICE MANUAL

COMPACT DISC PLAYER

MODEL No. XL-Z555BK



COMPACT disc DIGITAL AUDIO

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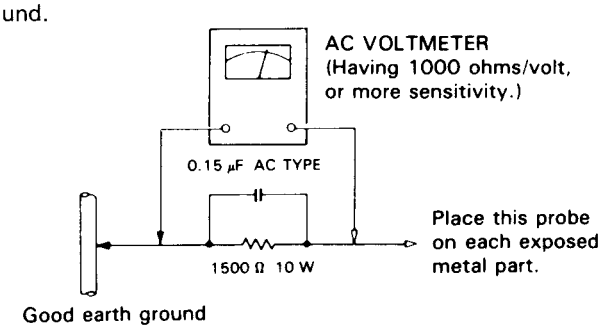
No. 20059
May 1988

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage current check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5 mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500 Ω 10 W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).


AC VOLTMETER
(Having 1000 ohms/volt, or more sensitivity.)
0.15 μF AC TYPE
1500 Ω 10 W
Place this probe on each exposed metal part.
Good earth ground

Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Important for Laser Products

1. CLASS 1 LASER PRODUCT
2. DANGER: Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
3. CAUTION: There are no serviceable parts inside the Laser Unit.
4. CAUTION: Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.
5. CAUTION: The compact disc player uses invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.
6. CAUTION: If safety switches malfunction, the laser is able to function.
7. CAUTION. Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

VARNING: OSYNLIG LASERSTRÅLNING UPPSTÅR VID KOMPONENTENS ÖPPNING NÄR SÄKERHETSBRYTAREN ÄR FRÅNSLAGEN.

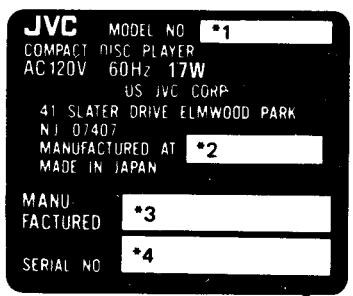
ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅPNING NÅR SIKKERHETSBRYTEREN ER AVSLOTT.
UNNGÅ UTSETTELSE FOR STRÅLING.

VAROITUS: LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ (NÄKYMÄTÖNTÄ) SILMILLE VAARALLISTA LASERSÄTEILYÄ.

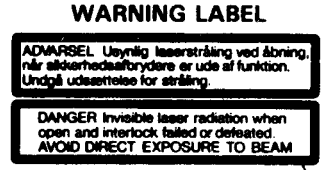
REPRODUCTION AND POSITION OF LABELS

IDENTIFICATION LABEL BY DHHS
(Only for the U.S.A.)

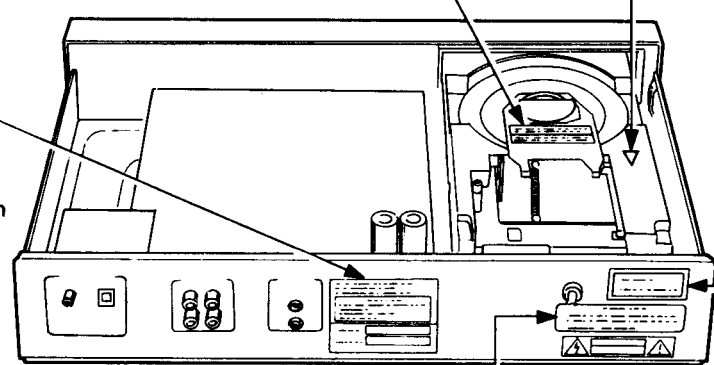


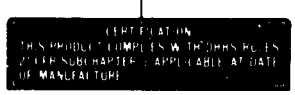
Note:
*1 Model number
*2 Identification code of factory
*3 The date of manufacture
*4 The serial number of production

WARNING LABEL

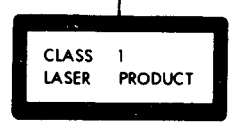

ADVARSEL Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.
DANGER Invisible laser radiation when open and interlock failed or defeated. AVOID DIRECT EXPOSURE TO BEAM

HAZARD SYMBOL LABEL
(Only for Continental Europe)





CERTIFICATION LABEL BY DHHS
(Only for the U.S.A.)



CLASSIFICATION LABEL
(Only for Continental Europe, the U.K. and Australia)

DESCRIPTION AND FUNCTIONS

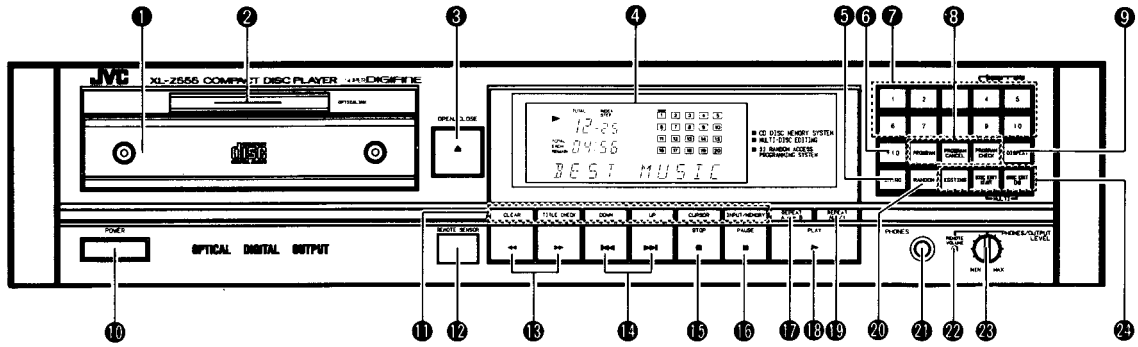


Fig. 5

❶ Disc platter
Load the disc to be played.

Notes:

- **While the disc platter is moving in or out, do not turn the power off or push or pull on the disc platter by hands etc. because a malfunction may occur.**
- **While inserting the disc platter into this unit, if something gets stuck in between by mistake, follow the directions below.**
  1. **Remove the disc platter by pressing the [OPEN / CLOSE (▲)] button.**
  2. **Press the [POWER] button to turn off the unit.**
  3. **Insert the disc platter gently.**
  4. **Turn the power back on by pressing the [POWER] button.**

❷ OPTICALINK indicator
While the beam laser pickup is reading signals, this indicator blinks. However, if stops blinking and lights when play is ready to start.

❸ OPEN/CLOSE (▲)
Press to move the disc platter in and out. Press once and the disc platter will move out; now you can load a disc. Press again to move the platter back in. The disc is now ready to be played.
If it is pressed during play, play will be interrupted. And the program will be erased from memory and the disc platter will come out.

❹ Display window
This shows the total number of selections on the disc, the total playing time, the elapsed playing time, the remaining playing time, various program data, etc. For more details, see "DISPLAY" on page 25.

❺ INTRO
Press this button to monitor the desired selections by hearing the first 15 seconds of individual selections. When this button is pressed in the standby mode, play starts in order from the first selection (or from the first programmed selection) and continues playing the first 15 seconds of each selection (or each programmed selection) to the end.
When you want to hear the full-length play of such selection, press the [INTRO] button while you are hearing it. The introduction mode will be released and normal play will starts.

❻ +10
Use this button to designate track numbers greater than 10 or establish the time interval. For details, refer to "10 key operation buttons".

❼ 10 KEY OPERATION
To designate the desired track numbers or establish the time interval during the tape editing, use these buttons. If the desired number is 10 or less, use the [1] ~ [10] buttons. However, to assign a track number greater than 10, use the [+10] button and the [1] ~ [10] buttons.

Examples ([1] ~ [10] buttons)
1. To assign the 25th track, press the [+10] button twice then press the [5] button.
2. To assign the 30 minutes, press [+10] button twice then press the [10] button.

❽ PROGRAM
To program the sequence of the selections to be played, press this button while the CD player is in the standby mode when the disc platter is not loaded. The PROGRAM indicator lights and up to 32 selections can be programmed.
To release this programmed play, press the [PROGRAM] button again.
PROGRAM CHECK: Press this button to check the sequence in which programmed selections will be played. While the button is being pressed the play sequence and track number will appear in the display section.

Example:

∗ 01 – 03 ∗
Play Sequence / Track Number

PROGRAM CANCEL: This button will cancel programmed selections one at a time. A red line will appear in the display window when this button is pressed while the player is in the STAND BY mode. Each programmed selection will be cancelled in sequence.

❾ DISPLAY
This button changes the time data in the display window.
Each time this button is pressed, the indication changes as follows:
EACH → EACH REMAIN → TOTAL → TOTAL REMAIN
For further detail, see "Display" on page 25.

❿ POWER
Press to turn on the power, the display will light. Press again to turn the power off. The display will go off.

⓫ DISC MEMORY*
A title or message of your choice can be placed in MEMORY. (Up to 10 letters or number can be entered.) When the disc is being played the title or message will be displayed.
CLEAR: Press this button to clear the DISC MEMORY.
TITLE CHECK: Press this button to check the titles or messages that have been entered into the memory.
DOWN, UP: Press this button to search for letters you wish to enter. The letters will appear in descending or ascending alphabetical order.
CURSOR: When this button is pressed, the location of the next letter in the title you want to enter will begin to blink.
INPUT/MEMORY: Press this button to place the title you have entered into MEMORY.
* For a detailed explanation please read page 53 "USING THE CD DISC MEMORY.

⓬ RECEIVED Indicator
REMOTE SENSOR
While infrared signals are being received from the remote control unit, the RECEIVED indicator lights.

⓭ ◀◀ (SEARCH)*
Press this button while in the play or pause mode to scan backwards. When this button is pressed continuously, the CD player will the backward-search slowly for about 8 seconds, and then to into a higher speed search.
▶▶ (SEARCH)*
Press this button while in the play or pause mode to scan forward. When this button is pressed continuously, the CD player will forward-search slowly for about 8 seconds and then go into higher speed search.

* When pressing the [◀◀] or [▶▶] button during play, you can hear slight sound reproduction. With this sound, you can monitor your selections.

⓮ ⏮ (AUTO SEARCH)
Press this button to locate the start of the current selection or to go back to the previous selection during play. Play will go back one selection each time the button is pushed. If the button is held down, play will continue to go back one selection at a time until the button is released.

▶▶| (AUTO SEARCH)
Press to go to the start of the next selection. Every time this button is pressed, the pickup goes forward by one selection. Holding the button down moves the pickup forward continuously.

⑮ STOP (■)
Press to stop play.
A few seconds after the disc has stopped rotating, the player goes into the stand-by mode with the track number "1" shown in the display window. The player is then ready to play.

⑯ PAUSE (❚❚)
Press to suspend play temporarily; the optical pickup stops and the disc continues to rotate. This status is called the pause mode.

⑰ REPEAT A ↔ B
To play a certain section of the disc, press this button during play or pause mode.
Pressed this button at the point where you want the play to start, and "[A] ↔" will light in the display window. Press this button again at the point where you want to end play, and "[A] ↔ [B]" will light in the display window. Play will then start between the A and B points.
To release this repeat play, press the [REPEAT A ↔ B] button again or press the [REPEAT ALL/1] button.

⑱ PLAY (▶)
Press to start play.
If disc platter is out; press this button, the disc platter will then move in and play will start (without pressing the [OPEN / CLOSE (⏏)] button).

⑲ REPEAT ALL/1
Press this button to play one selection, all the selections, or the programmed selections of the disc repeatedly.
When desiring all the selections, press the button onece and play starts. "[ALL]" and "REPEAT" will be lit in the display window. When desiring one selection, press the button twice and pay will start with "[1]" and "REPEAT" lit in the display window.
To release this repeat play, press the [REPEAT ALL/1] button again.

⑳ RANDOM
To play selections of the disc at random, press this button.

㉑ PHONES
Insert the headphones plug into this jack.

㉒ REMOTE VOLUME Indicator
While adjusting the volume by the remote control unit, this indicator blinks.

㉓ PHONES/OUTPUT LEVEL
Adjust the volume of the headphones and signals output from the VARIABLE OUTPUT terminals by this knob.

Note:
- **When listening to music by the headphones, be careful not to stimulate your ears by setting the volume too high.**
  Adjust the volume properly to obtain an ear-pleasing listening.

㉔ EDITING
When editing the disc data in the cassette tape, the time interval can be established in advance in accordance with the tape length.
DISC EDIT START*
Press this button to begin MULTI DISC EDITING.
DISC EDIT END*
Press this button when editing is completed.
* For a detailed explanation please read page 47 "MULTI DISC EDITING".

DISPLAY (MULTI MODE DISPLAY)

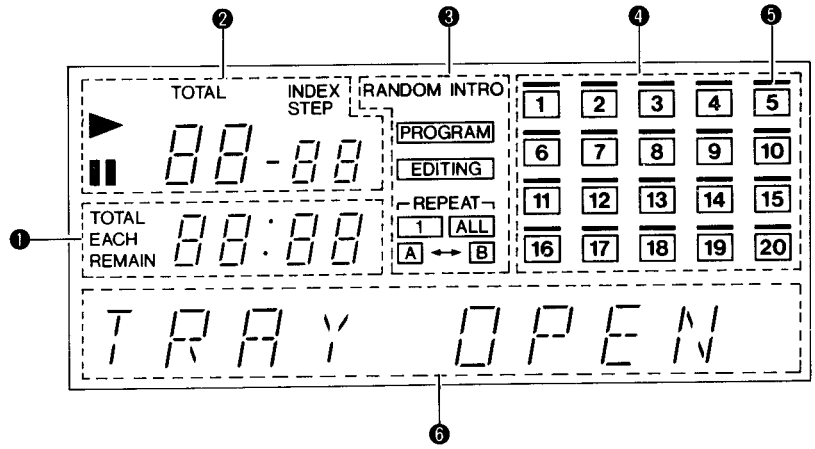


Fig. 6

❶ TIME INDICATOR

Each time the DISPLAY button is pressed, the indication changes in the following order.

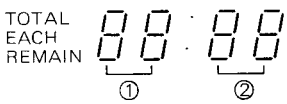
EACH, EACH REMAIN, TOTAL, and TOTAL REMAIN

EACH: Shows the elaps time of each selection.

EACH REMAIN: Shows the remaining playing time of each selection. (Shows nothing when the total number of selections or programs are greater than 32.)

TOTAL: Shows the elapsed playing time of the disc or the programmed selections. (Shows nothing when the total number of selections are greater than 32.)

TOTAL REMAIN: Shows the remaining playing time of the disc or the programmed selections. (Shows nothing when the total number of selections are greater than 32.)



① (MINUTE)

Shows the total playing time, elapsed playing time, or remaining playing time in minutes. (Shows nothing when the total number of selections are greater than 32.)

② (SECOND)

Shows the total playing time, elapsed playing time, or the remaining playing time in seconds.

❷ TOTAL/INDEX/STEP/PLAY/PAUSE Indicators

TOTAL: Lights when all the selections of the disc are shown.

Shows the programmed selection numbers or the current selection number of the disc.

INDEX: Shows index numbers.

STEP: Shows the numbers of memory steps of the programmed selections.

▶ : Lights when the PLAY (▶) buttons is pressed.

❚❚ : Lights when the PAUSE (❚❚) button is pressed.

❸ PLAY MODE Indicators

RANDOM

Lights during random shuffle play.

INTRO

Lights when the first 15 seconds of individual selections are played.

PROGRAM

Lights when selections are ready to be programmed.

EDITING

Lights when performing edit recording or establishing the time interval (about 10 seconds).

REPEAT

Lights when the repeat play is ready.

1

Lights when the repeat play of only one selection is entered.

ALL

Lights when the repeat play of all the selections is entered.

A ↔ B

Lights when the repeat play between A and B is ready.

❹ Program Chart

This Chart indicates the number of each selection on the disc. When a selection is programmed, " □ " which surrounds the selection number lights. If the disc contains more than 20 selections, "OVER" lights. When this occurs, you can determine confirm the total number of selections by the TOTAL TRACK.

❺ – Mark

This mark (red) indicates the number of the current selection. Thus it can be used to scan or program the desired selection.

■ When the disc is inserted upside down or is not loaded, "NO DISC" appears, as shown below.

❻ MULTI CHARACTER DISPLAY

When the CD PLAYER is activated, information may appear in the display section in the following manner. Also, if the title of a disc or tune, or a message has been entered into the memory, this information may be displayed.

TRAY OPEN: The disc platter is out.

TRAY CLOSE: The disc platter is in.

READING: The contents of a disc are being read.

DISC TITLE: This will be displayed when no title or message has been entered.

RANDOM: Tracks from the disc are played at random.

SEARCH-F: Fast forward search for tunes.

SEARCH-B: Fast backward search for tunes.

STOP: Play is stopped.

PLAY: The player is playing music.

PAUSE: Play is temporarily stopped.

DISC EDIT: Multidisc editing.

TRACK- □ : Track number.

NO DISC: When a disc is not loaded or when a disc has been loaded upside-down, NO DISC will be displayed. After the following displayed, JVC COMPACT DISC MEMORY SYSTEM ..... CD MEMORY will be displayed.

REMOTE CONTROL UNIT (RM-SX555U)

- **How to install batteries**

1. Remove the rear cover of the remote control unit. By pressing down on it with your thumb and simultaneously pulling it back wards, as shown in Fig. 7.
2. Install batteries (AA, R6, UM-3) as shown in Fig. 8.
   Be sure batteries are installed with correct polarity, (+), and (–).
3. Reinstall the rear cover of the remote control unit. Slide the rear cover back as shown in Fig. 9.

- **How to operate**

The remote control range is approximately 7 meters.
Pointing the remote control on a angle to the receiver, will reduce the usefull distance of the remote control.
Use gentle best firm pressure when pressing the remote control buttons.

- **Batteries**

Incorrect use of batteries can cause corrosion or damage. Note the following points to lengthen battery life.

1. Install batteries observing the correct polarity, (+) and (–).
2. Do not use new and old batteries simultaneously.
3. Batteries with similar shapes may have different voltage ratings, be sure to use the correct batteries.
4. Remove batteries from the remote control until if it will not be used for a long period of time.

Note:

- **The lower the temperature, the shorter the battery life.**

- **Battery replacement**

The service life of the batteries depends on the condition of use; the standard life is about one year.
When the batteries become weak, the effective distance of the remote control unit will become shorter. If this happens, replace the batteries with new ones.

Notes:

- **The provided remote control unit (RM-SX555U) has the operating buttons which are basically identical with those of the CD player. The only difference is the [INDEX], [VOLUME], [FADE] buttons which are not on the CD player.**
- **When changing the program data, delete the program data with the [PROGRAM] button first. Then program the desired selections again with the [PROGRAM] button.**

❶ **INDEX**
(⟵): To start play from the desired index point, scan to the desired index point backward with this button.
(⟶): To start play from the desired index point, scan to the desired index point forward with this button.

❷ **VOLUME**
+: The volume increases slowly and continuously in proportion to the time of pressing the [VOLUME] button.
–: The volume decreases slowly and continuously in proportion to the time of pressing the [VOLUME] button.

* While the volume changes, the REMOTE VOLUME indicator blinks slowly. (Fig. 10)

❸ **FADE**
To decrease the volume, press this button. Each time the [FADE] button is pressed, the PHONES/OUTPUT LEVEL knob takes a quarter turn.

* While the volume changes, the REMOTE VOLUME indicator blinks quickly. (Fig. 10)

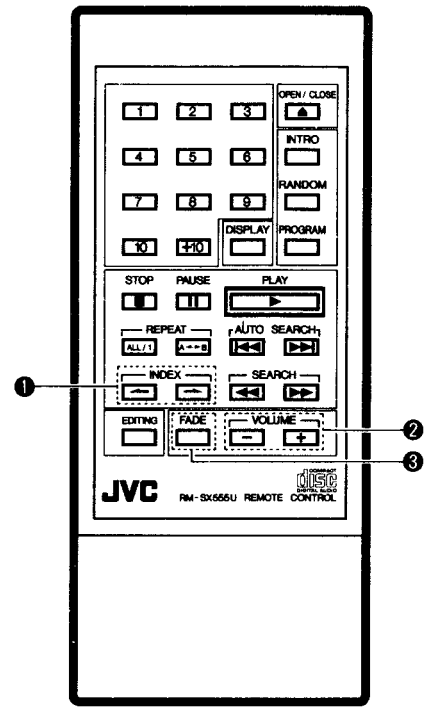


Fig. 10

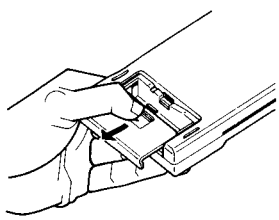


Fig. 7

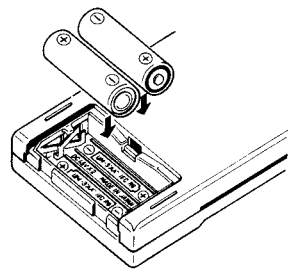


Fig. 8

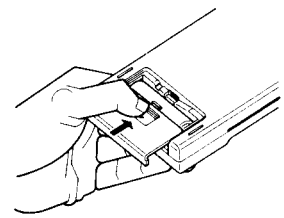


Fig. 9

HOW TO OPERATE

Preliminary Operation

1. Turn on and adjust components such as an amplifier to play selections on the CD player.
2. Turn on the CD player, the display window will light up.
3. Press the [OPEN / CLOSE (▲)] button to slide the disc platter out.
4. With its label side up, load a disc on the CD player.
   When using an 8 cm (3") disc, place it in the 8 cm (3") disc holder which is in the center of the disc platter.

To Play From the First Selection to the Last Selection of the Disc

5-1. Press the [PLAY (▶)] button, and the indicator on this display blinks. At the same time the disc platter is automatically loaded and play of the first selection of the disc is started. Upon start of play, the indicator on this display stops blinking.

5-2. When the [PLAY (▶)] button is pressed after the [OPEN / CLOSE (▲)] button has been pressed, play is also started with the first selection of the disc. When this occurs, the display shows the number of tracks and total playing time of the disc for 3 seconds, immediately after the disc is loaded. However, the display shows nothing if the [PLAY (▶)] button is pressed before these data appear in the display window.
During play, the (▶) indicator will be lit, and the track number and elapsed time of the current selection are shown in the display window. When the play of all the selections ends, the CD player enters the standby mode.

To Play From Any Desired Selection to the Last Selection of the Disc

6. Designate the desired selection number by the 10 key operation buttons. The red mark (—) of the desired selection (in the display window) lights and play starts.
   The desired selection also can be designated by the [⏮], [⏭] buttons.
   In this case, play starts when the [PLAY (▶)] button is pressed.

   Example
   To start playback from the fourth selection of the disc, press "4" of the 10 key operation buttons.

To Stop Play Temporarily

7. Press the [PAUSE (❚❚)] button. The indicator (❚❚) on the display lights and play stops temporarily.
   To continue playing, press the [PLAY (▶)] button.

To Switch Selections During Play

8. • To play from the start of the desired selection, designate the desired selection with the 10 key operation buttons.
   • To skip to the next selection during play, press the [⏭] button.

   Example
   To switch from the second selection to the third selection, press the [⏭] button.

   • To skip to the previous selection, press the [⏮] button, and locate the start of the current selection. Immediately after this press the [⏮] button again.

   Example
   To switch during play from the seventh selection to the sixth selection, press the [⏮] button twice.

To Repeat Play

9-1. Press the [REPEAT ALL/1] button. The REPEAT ALL indicator light and all the selections or all the programmed selections of the disc can be played back repeatedly. If the [REPEAT ALL/1] button is pressed again, "REPEAT 1" appears in the display window and one display window and one designated selection will be played back repeatedly. To release the repeat play, press the [REPEAT ALL/1] button again.

Note:

• To repeat the programmed play, or the random play, or the first 15 seconds of each selection, or the first 15 seconds of randomly selected tracks, press the [REPEAT ALL/1] button.

9-2. **• To establish the starting point of the repeat play**
Press the [REPEAT A ↔ B] button at the point where the start of repeat play is desired (Point A).
"[A] ↔" will light in the display window, and the play starting point (Point A) will be stored in memory.

• To establish the ending point of the repeat play
Press the [REPEAT A ↔ B] button again at the point where the end of repeat play is desired (Point B).
(Note: Continue play until such ending point is reached or locate such ending point by pressing the [▶▶] button.)
" [A] ↔ [B] " will light in the display window, and the play ending point (Point B) will be stored in memory. At the same time, play will start from Point A and continue repeatedly between Point A and Point B.

• To eliminate the repeat play between A and B.
Press the [REPEAT A ↔ B] button again. The REPEAT [A] ↔ [B] indicator will go off, and the repeat play will be eliminated.
Pressing the [▶▶] button while the [A] ↔ [B] REPEAT indicator is lit causes the memory of Point B to be erased. Therefore, Point B can be renewed by pressing the [▶▶] button and pressing the [REPEAT A ↔ B] button again.

Note:

• Repeat play between A and B is not possible during programmed play or random play.

To Cancel Play

10. Press the [STOP (■)] button, and play will stop.

To Remove the Disc

11. Slide the disc platter out by pressing the [OPEN / CLOSE (▲)] button.

To Program Play

1. Play can be programmed in the standby mode. To program during play, place the CD player in the standby mode by pressing the [STOP (■)] button.
2. Press the [PROGRAM] button. The PROGRAM indicator will light in the display window, thus indicating theat play is ready to be programmed.

3. Program any desired selections by pressing the 10 key and [+10] key operation button. Up to 32 selections, can be programmed. The display shows the total playing time of the programmed selections and the number of memory steps. Each time the programming is finished, the mark " □ " beside the programmed selection lights.
4. When the programming is finished, press the [PLAY (▶)] button.
   Play will start in the programmed order.

Notes:
- **Even during play, additional programming is possible by pressing the 10 key operation buttons.**
- **When programming is carried out with the disc platter out, the total playing time of the programmed selections will not be displayed.**

- **Re-programming**

5. Set the CD player to the standby mode and press the [STOP (■)] button.
   By so doing, all the programmed selections are cancelled and programming becomes possible.

- **Release of the programmed status**

6. Press the [PROGRAM] button again. The PROGRAM indicator will go off and the normal (non-programmed) play becomes possible.
   The programmed status can be also released by sliding the disc platter out with the [OPEN / CLOSE (▲)] button.

Notes:
- **If the disc is not rotating during programmed play, the sequence of the programmed selections can be confirmed with the [|◀◀] , [▶▶|] buttons.**
- **If the total playing time of the programmed selections exceeds 99 minutes and 59 seconds, only "--:--" will light in the display window.**
- **If the 32nd or higher selection of a disc is programmed, only "--:--" will light in the display window.**

To Play Randomly

1. Press the [RANDOM] button. The "RANDOM" indicator will light, and all the selections will be played once at random. Each time play of an individual selection is finished, its selection number and program chart (□) go off. When play of all the selections is finished, the CD player toes into the standby mode. However, the random play can be repeated by pressing the [REPEAT ALL/1] button.
2. To release the random play, place the CD player in the standby mode by pressing the [STOP (■)] button or return the random play to the normal play by designating any selection with the 10 key operation buttons.

Note:
- **The programmed selections can not be played at random.**

To Perform the Introduction Play

When the [INTRO] button is pressed the INTRO indicator will light. The first 15 seconds of each track will then be played in order, if selections have been programmed the first 15 seconds of the programmed selections will be played in the order they have been programmed. If random play is being used, the first 15 seconds of tracks will be played at random. When INTRO play is complete, the player will go into the STAND-BY mode. If the [REPEAT ALL/1] button is then pressed, INTRO play will be repeated over and over. Pressing the [INTRO] button once again will cancel intro play.

To Perform Synchronized Recording and Edit Recording

Synchronized recording is possible by connecting the cassette deck to the COMPU LINK-1/ SYNCHRO terminals of the CD player through the remote wire.

- Press the [REC (○)] and [PAUSE (❚❚)] buttons of the cassette deck.
- Press the [PLAY (▶)] button of the CD Player to start the synchronized recording.

Notes:
- **To perform synchronized recording, the CD player should be played in synchronization with a tape deck.**
- **To record selections of your choice from a disc, first press the [PLAY (▶)] button then use the 10 key pad to enter the track numbers you want. When recording RANDOM play, first press the [PLAY (▶)] button then press the [RANDOM] button. When recording programmed play, press the [PLAY (▶)] button after programming has been completed.**

For Edit Recording

1. Place in standby mode.
2. Designate the first selection with the [|◀◀ , ▶▶|] button.
3. Press the [EDITING] button.
4. While the EDITING indication is lit (about 10 seconds), establish the time interval with the 10-key and [+10] operator button according to the table length.

Example
- To establish 30 minutes, press the [+10] button twice and [10] of the 10-key once.
- To establish 23 minutes, press the [+10] button twice and [3] of the 10-key once.

5. When the time interval is established, the EDITING indicator blinks. Then all the designated and non-designated selections which can be recorded within the time interval are programmed. The program chart selection numbers are displayed in the (□) mark.
   At this time, in the remaining time interval, if a selection is possible, within that interval after the next selection, that selection number will blink for 10 seconds. By establishing that number in the 10-key, the selection can be recorded within that time interval.
6. Place the cassette deck in the REC PAUSE mode.
7. Press the [PLAY (▶)] button to start recording. When the last program selection recording is completed, the edit recording will automatically stop.

Note:
- **To change the established time interval, press the [PROGRAM] button once and then press the [EDITING] button again.**

MULTI DISC EDITING

With this convenient feature, you can record up to 48 selections of your choice from a maximum of 6 compact discs, (you can record up to 32 selections from one disc.)

To record selections of your choice from up to 6 discs. Use the following procedure.

1. Place the disc in the disc platter.
2. Press the [OPEN / CLOSE (⏏)] button. The disc platter will now enter the player.
3. Press the [DISC EDIT START] button. DISC EDIT will light up in the display section.
4. Use the 10 key pad to specify the recording time. If you want to change the recording time, press the [PROGRAM] button and then the [DISC EDIT START] button. You can now set the recording time with the 10 key pad.

   Example
   You want to record 30 minutes on one side of the tape press the [+10] key two times and then press the [10] key.
5. Press the keys on the 10 key pad for the track numbers you want to record in the order you want them recorded.
   Editing for one disc is now completed.
   It is possible to record a maximum of 32 selections from one disc. If there are more than 32 tracks on a particular disc it will not be possible to enter more than 32 tracks. Once 32 tracks from one disc have been entered, following the five outlined steps, then even if the same disc is put in the player it must be treated as a separate disc.

   Example
   You wish to record the second and fourth tracks on a disc.
   Press key 2 and key 4

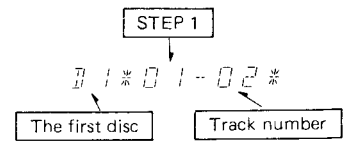
   If you want to continue with the editing of another disc, press the [OPEN / CLOSE (⏏)] button and remove the disc when the platter comes out.
   Load the next disc you want to edit into the player and by repeating step 5 you can record the tunes of your choice.
6. DISC EDIT END
   Press this button when disc editing has been completed. When more than one disc has been edited "DISC-1 IN" will blink in the display section and the disc platter will automatically slide out.
   If only one disc is edited, the player will then be in the normal program mode when the [DISC EDIT END] button is pressed.
   In this situation go to step 8.
7. SETTING THE DISCS
   Place the first disc on the platter, making sure it corresponds to the displayed disc information displayed. Press the [OPEN / CLOSE (⏏)] button and the disc will go into the player.
8. Set up the tape deck by pressing the RECORD and PAUSE buttons.

   Notes:
   - **This applies only when using a tape deck equipped with synchronized recording terminals, sold by this company.**
   - **When using a tape deck not equipped with synchronized recording terminals, read page 43 "Edited recording" before beginning edited recording.**
9. Press the [PLAY (▶)] button to begin recording.
10. After the first edited disc has been played the disc number of the next disc to be played will blink in the display section. Using the [OPEN / CLOSE (⏏)] button, remove the first disc and place the next disc in the player. Press the [PLAY (▶)] button and play will begin.
11. When all of the edited discs have been played, DSIC-1 IN will blink in the display section.

Press the [PROGRAM] button to cancel this mode.

CHECKING THE DISC EDITING INFORMATION WHICH HAS BEEN INPUT

You can check the program order by pressing the [PROGRAM CHECK] button, when the player is stopped, being played, or the [PAUSE (❚❚)] button is pressed.



WHEN THE PROGRAM CHART OR TIME DISPLAY BLINKS

A PROGRAM CHART blinking indicates that the selection that is blinking will go over the set recording time when it will be recorded.
In this situation a selection that is not blinking can be entered and the set recording time will then not be exceeded. Also, in the situation where the set time is exceeded, the exceeded time will blink in the display section. The [PROGRAM CANCEL] button can be used to revise the program.

PROGRAM CANCEL BUTTON

If you want to delete a programmed selection, the [⏮], [⏭] button can then be used to move the red line to the selection, you wish to take out. Press the [PROGRAM CANCEL] button to delete the tune from the program.

LOADING THE WRONG DISC INTO THE PLAYER

If, when setting a disc according to step 7 (page 49) you accidently load the wrong disc, the platter will automatically corne out. Check the display to see which disc is next and place the correct disc on the platter, then load.

TO STOP DISC EDITING

Press the [PROGRAM] button.

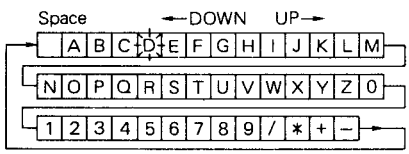
USING THE CD DISC MEMORY

Various information can be displayed in the display section when the player is activated. You can create disc and tune titles, or messages, which, when placed in memory, will be displayed when the disc is being played.

METHOD OF INPUTTING INTO MEMORY:

* A tune title or message can be entered into memory only if the disc title has previously been entered.

1. Place a disc in the disc platter.
2. Press the [OPEN / CLOSE (⏏)] button and the disc will go into the player. (READING will appear in the display section followed by DISC-TITLE)
3. Press the [INPUT/MEMORY] button. (The CURSOR will blink in the position for the first character.)
4. Use the [UP] or [DOWN] button to search for a character you want to enter. If the [UP] or [DOWN] button is pressed continuously the characters will light in the order shown in the diagram below. When a character you wish to enter appears, take your finger off the button.



Example
At present D is lit, if the [UP] button is pressed E will light, if the [DOWN] button is pressed C will light.

5. When the [CURSOR] button is pressed the cursor will blink at the next character position. (Once the cursor has moved 10 positions, the next time it is pressed it will return to the first character position.)
6. Follow steps 4 and 5 to create titles or messages.
7. After the last character has been entered, press the [INPUT / MEMORY] button to place the title into MEMORY.
8. After the DISC TITLE has been placed in memory, use the [⏮] , [⏭] button to select the track numbers and follow steps 3 to 7 to create and input titles or messages into memory.

Note:

- **Each title or message is limited to 10 characters. The MEMORY can store 512 titles.**

CORRECTING OR CHANGING INPUTS TO MEMORY

Making a correction during the input stage

- **Correcting a particular character**

1. Press the [CURSOR] button so that it blinks in the location you wish to correct.
2. Use the [UP] or [DOWN] button to search for the character you wish to input.
3. When pressed the [CURSOR] button to blink at the position for the next character.
4. Follow steps 2 and 3 to create the titles or messages you want.
5. When the last character has been entered into the title, press the [INPUT/MEMORY] button and the title will go into memory.

- **To clear all the information stored in memory**
  Press the [CLEAR] button and then the [INPUT/MEMORY] button.

AFTER INPUTTING HAS BEEN COMPLETED

- **Correcting a particular location**

1. Press the [INPUT/MEMORY] button then operate the [CURSOR] button so that it blinks at the location you wish to correct.
2. Follow steps 2 to 5 as outlined in "Making a correction during the input stage."

- **When you want to clear all the information stored in memory**
  Press [INPUT/MEMORY] , [CLEAR] , [INPUT/MEMORY] in that order.

Note:

- **When you wish to change the disc title. First press the [PLAY (▶)] button and then the [STOP (■)] button. The disc title will be displayed. You can now change it by following steps 1 to 5 outlined in "Making a correction during the input stage."**

CHECKING AND CLEARING A DISC TITLE

- **Checking a disc title that has been input.**
  With the disc platter out, you can check the disc titles that have been entered by pressing the [TITLE CHECK] button.

- **To clear undesired disc titles.**
  The disc title you want to take out will be displayed when using the [TITLE CHECK] explained above. By pressing the [CLEAR] button the disc title and tune titles or messages which are included with the disc title will be erased.

TROUBLESHOOTING

What appears to be a malfunction may not always be serious.
Make sure first ...

Although the disc is inserted in the CD player, "no disc" appears.
Isn't the disc placed upside down?
— Place the disc on the disc tray with its label side up.

Selections can not be programmed.
Is the "PROGRAM" indicator lit?
— Press the [PROGRAM] button.

The remote control unit does not function.
Are the batteries fresh?
— Replace the batteries with the new ones.

The sound intermittently and is harsh to the ear.
Is the disc dirty?
— Wipe off the disc surface with a soft cloth.
Is the disc scratch?
— Replace the disc with a new one.
Is the disc warped?
— Replace the disc with the new one.

SPECIFICATIONS

System : Compact disc player
Signal detection system : Non-contact optical system
Number of channels : 2 channels
Frequency response : 2 Hz – 20,000 Hz
Dynamic range : 97 dB (1 kHz)
Signal/noise ratio : 106 dB (at digital 0)
Channel separation : 92 dB (1 kHz)
Harmonic distortion : 0,0035% (1 kHz)
Wow and flutter : Less than measurable limit
Output level : 2.0 Vrms (full scale)
Digital output level : 0.5 Vp-p (75Ω terminal impedance)
Number of program steps : 32 steps
Dimensions : 475 (W) x 115 (H) x 299 (D) mm (19-5/16" x 5-1/2" x 12-1/4")
Weight : 5.7 kg (12.6 lbs)
Accessories : Signal cord (1 m · 3.28 ft) 1
Remote cable (1 m · 3.28 ft) 1
Remote control unit (RM-SX555U) 1
Battery (AA, R6, UM-3) . . . 2

Design and specifications subject to change without notice.

POWER SPECIFICATIONS

Areas	Line Voltage & Frequency	Power Consumption
U.S.A.	AC 120 V ∿, 60 Hz	17 watts
Canada		
U.K.	AC 240 V ∿, 50 Hz	
Australia		
Continental Europe	AC 220 V ∿, 50 Hz	
Saudi Arabia		
Other Areas	AC 110 / 120 / 220 / 240 V ∿ selectable, 50/60 Hz	

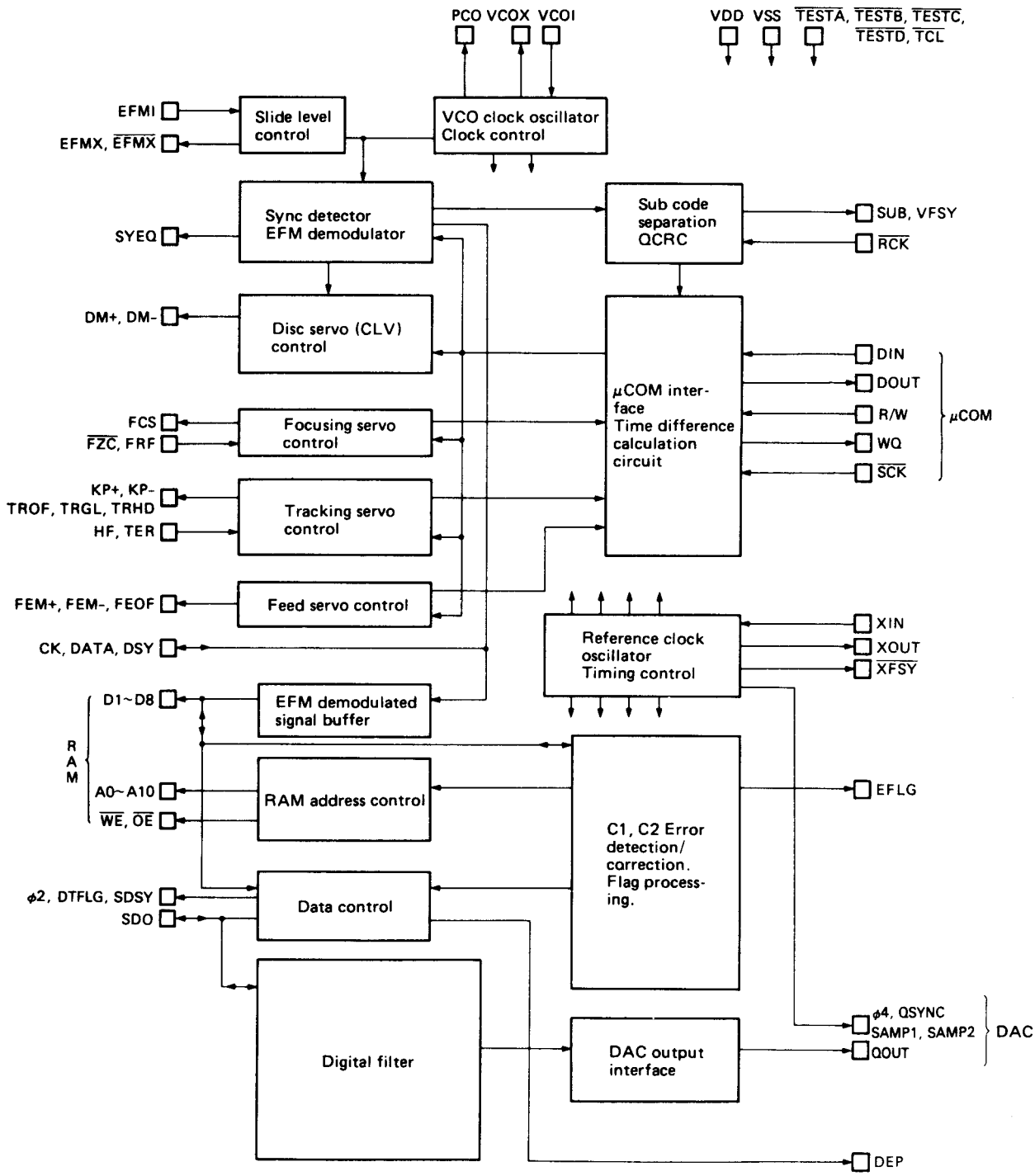
Description of Major LSI

■ IC401: YM3815

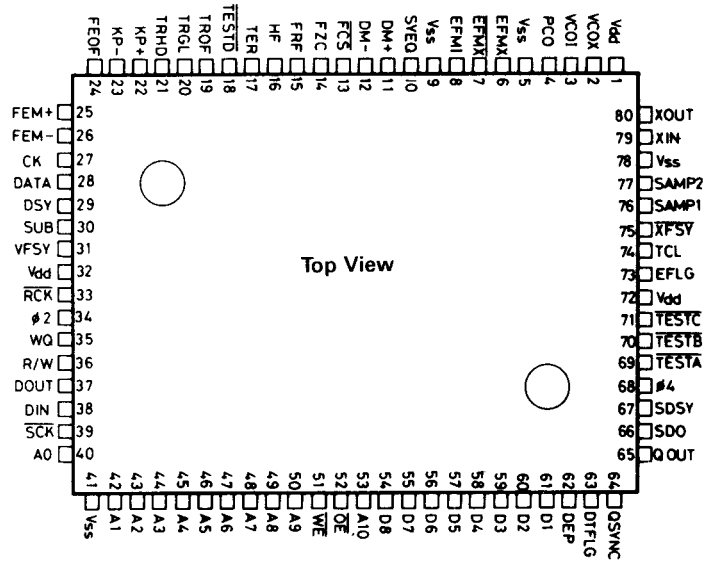
(1) Outline:

YM3815 is a C-MOS LSI for signal processing (SGP) and servo control (SVC) in a CD player. It is used for the demodulation of the EFM signal from the photo pickup, detection/correction of the error signal, signal processing in digital filtering, etc. and for various servo controls (focusing, disc, tracking and feed servos).

(2) Internal block diagram



(3) Terminal Layout



(4) Pin Functions

Pin No.	Pin Name	I/O	Function
1 32 72	VDD	–	These are +5 V power supply terminals.
2 3	VCOX VCOI	O I	A clock pulse (average: 8.6436 MHz) is generated when an LC resonance circuit is connected to these terminals.
4	PCO	O	This terminal outputs the phase difference when the polarity of the clock and the EFM pattern changes; when the polarity becomes positive (+), the polarity of the variable-capacitance diode is set to that the frequency will rise, and clock regeneration is enabled.
5 9 41 78	Vss	–	These are ground terminals.
6 7	EFMX $\overline{\text{EFMX}}$	O O	These terminals are connected to the EFM signal slice level control circuit. Amplification-limited, mutually antiphased signals are generated.
8	EFMI	I	The EFM signal (1~2 Vp-p) is input over this terminal.
10	SYEQ	O	This is the check output terminal; it becomes high when the synchronizing signal from the internal counter and the cynchronizing signal detected from the EFM pattern coincide with one another.
11 12	DM+ DM–	O O	These terminals output the PMW for the spindle motor drive circuit. The spindle motor speeds up when DM+ is H, and slows down when DM– is H; both terminals cannot be H simultaneously.
13 14 15	FCS $\overline{\text{FZC}}$ FRF	O I+ I	These terminals output signals for controlling the focus servo. The FCS signal activates the focusing (drawing) operation; the $\overline{\text{FZC}}$ signal, generated when the focus point is achieved, terminate the focusing operation; and the FCS flag is dropped internally at the FRF signal generated when reflected light is detected.
16 17 19 20 21 22 23	HF TER TROF TRGL TRHD KP+ KP–	I I O O O O O	When tracks are being crossed during searches, the amplitude variation of the generated HF signal is sampled at the zero-cross point of the tracking error signal TER and the TROF signal is output. The level variations of this signal turn the servo on and off, greatly facilitating track acquisition. KP+ or KP– is output to conduct tracking, and TRHD is output during tracking to cause generation of the tracking error signal. The TRGL signal is for increasing the tracking gain after tracking is completed.
24 25 26	FEOF FEM+ FEM–	O O O	The FEM+ and FEM– high-speed feed signals are output over these terminals, as is the FEOF signal for cutting the feed servo. These terminals are all at the low level during normal PLAY operations.

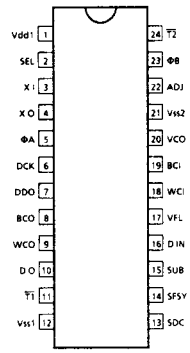
Pin No.	Pin Name	I/O	Function
27	CK	I/O	This is the check terminal. It has a 4.3218-MHz clock, produced by halving the frequency of the VCO.
30 31 33	SUB VFSY $\overline{RCK}$	O O I+	VFSY is an output, synchronizing signal combining the frame and the sub-code frame (frame 98). Sub-codes P ~ W can be read out in bit serial form from the SUB output terminal if an eight-fold clock is applied to the RCK terminal when the VFSY's level change from H to L can be externally detected.
35	WQ	O	This terminal is connected to COM; it is for inputting the data transfer (SPC to COM) request signal.
36	R/W	I	This terminal is connected to COM; it is the input terminal for changing the data transfer mode: when L, data can be transferred from SPC to COM; when H, from COM to SPC.
37	DOUT	O	This terminal is the data output terminal connected to COM. When R/W is L, data is transferred from SPC to COM in synchronization with the SCK clock input.
38	DIN	I	This terminal is the data input terminal connected to COM. When R/W is H, data is transferred from COM to SPC in synchronization with the SCK clock input.
39	$\overline{SCK}$	I	This terminal is connected to COM; it is an input terminal that carries the clock signal necessary for data transfers.
40 42 ~ 50 53	A0 A1 ~ A9 A10	O	These are address output terminals and are connected to the RAM.
51	$\overline{WE}$	O	This terminal is connected to the RAM; the RAM is set to the write mode when this terminal is L.
52	$\overline{OE}$	O	This terminal is connected to the RAM; the RAM is set to the read mode when this terminal is L.
54 ~ 61	D8 ~ D1	I/O	These are data I/O terminals and are connected to the RAM. They are in the data output state when WE is L, and in the data input state when WE is H.
62	DEP	O	This terminal carriers the frequency characteristic control signal. De-emphasis is necessary when this terminal is H.
34 63 66 67	ϕ2 DTFLG SDO SDSY	O O I/O O	ϕ2 is a 2.1609-MHz crystal clock. SDO is for the serial output signals for the ϕ2 bit rate D/A converter. The L channel has 24 bits and the R channel has 25 bits. They are sent least significant bit first and most significant bit last.
28 29 64 65 68 69 70 71 73 74 75 76 77	DATA DSY QSYNC QOUT ϕ4 $\overline{TESTA}$ $\overline{TESTB}$ $\overline{TESTC}$ EFLG TCL $\overline{XFSY}$ SAMP1 SAMP2	I/O I/O O O O I+ I+ I+ O I+ I/O O O	Not used
79 80	XIN XOUT	I O	Oscillation is conducted when a crystal resonator (8.6436 MHz) is connected between these two terminals, and 10 pF capacitors are connected between each terminal GND.

■ YM3613B (IC150)

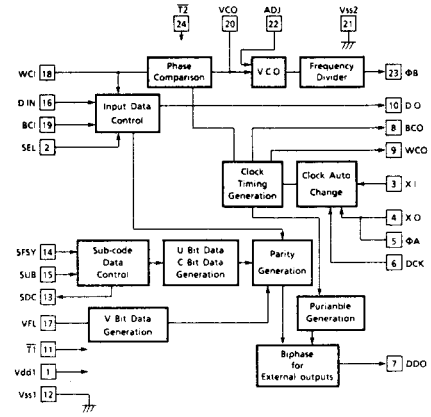
(1) Outline:

The YM3613B is a signal processing LSI for outputting CD player audio digital signals to the outside. This digital signal external output matches EIAJ standards without any special external circuits. A PLL circuit is built in and synchronized with the 44.1-MHz sampling frequency input to this LSI.

(2) External diagram



(3) Internal block diagram



(4) Terminal functions

***The terminals marked with aterisks * are pulled up.**

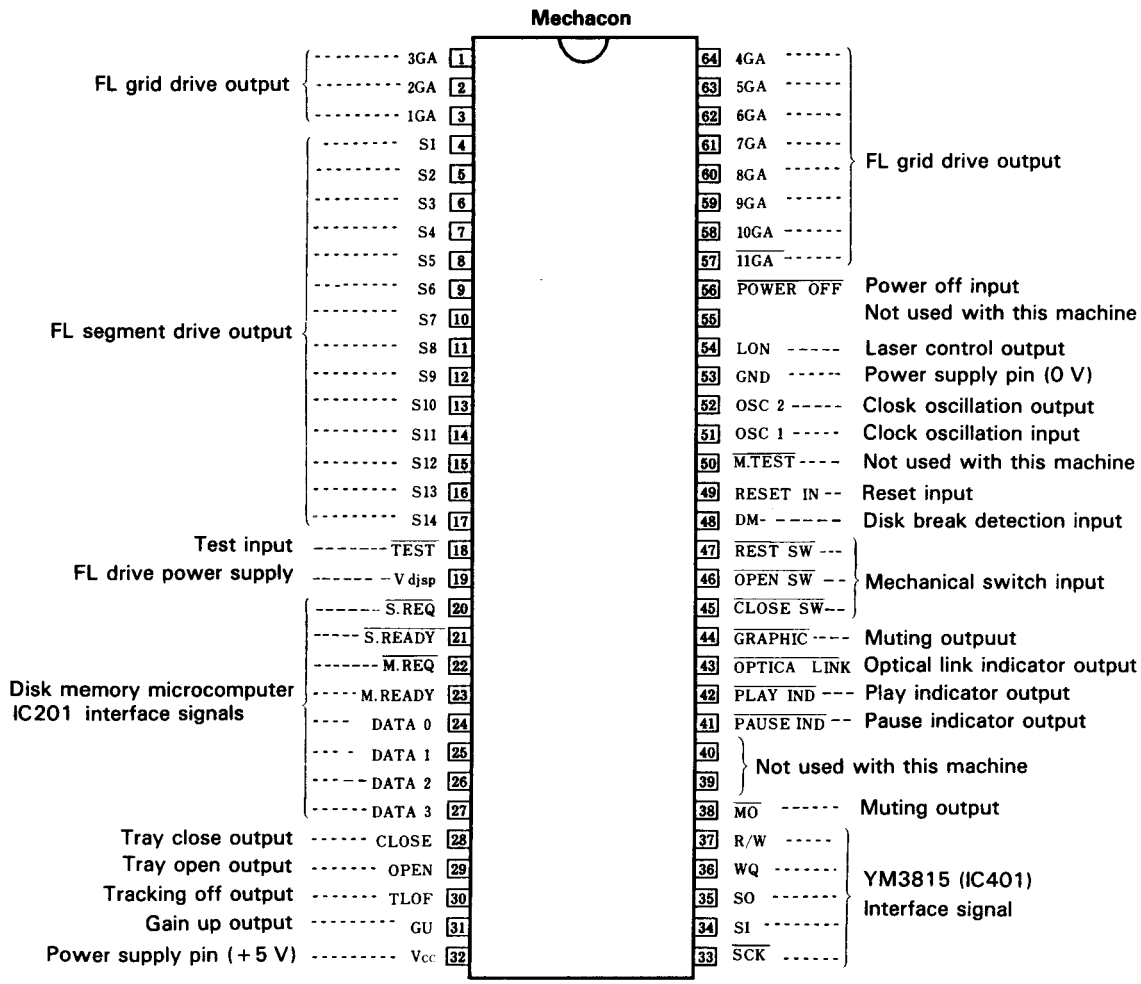
Pin No.	Pin Name	I/O	Function
1	VDD1		System + 5V power supply
2	SEL	*I	Switches the data input to the DIN terminal between most-significant bit first input and least-significant bit first input. H: most-significant bit first L: least-significant bit first
3	XI	I	Input terminal for 16.93344-MHz crystal oscillator
4	XO	O	Output terminal for crystal oscillator
5	φA	O	16.9344-MHz crystal oscillation output terminal
6	DCK	*I	External clock input terminal; automatically switched with the crystal clock (5.6448 MHz).
7	DDO	O	Bi-phase signal output for external digital output
8	BCO	O	Do timing clock; the DO output data is changed at the trailing edge. (2.8224 MHz)
9	WCO	O	This is the signal that shows the L/R channel; synchronized with the DO output. H: L channel L: R channel
10	DO	O	Outputs 16-bit audio data serially from the most significant bit.
11	T1	*I	VCO free run adjustment terminal; usually not connected; low during adjustment
12	VSS1		System ground
13	SDC	O	Timing clock for reading the sub-code data; after SFSY goes low, 8 clock pulses are output.
14	SFSY	I	Indicates the head of the sub-code data at the trailing edge when there is sub-code data at the SUB terminal.
15	SUB	*I	Subcode data input terminal; input serially in the order P-W.
16	DIN	I	16-bit serial data input terminal
17	VFL	I	Indicates the presence or absence of error in the audio data input to the DIN terminal.
18	WCI	I	Signal indicating the L/R channel; synchronized with the audio data input to the DIN terminal. H: L channel L: R channel
19	BCI	I	DIN terminal input audio timing clock The audio data is input at the rising edge when the signal at the SEL terminal is high and input at the trailing edge when the signal at the SEL terminal is low.
20	VCO	I/O	Terminal for an external condenser for the internal VCO circuit
21	VSS2		VCO ground terminal Grounded with VSS1; not connected to VSS1 within the LSI.
22	ADJ	I	VCO oscillation frequency adjustment terminal
23	φB	O	VCO output clock (8.6436 MHz)
24	T2	*I	Internal check terminal; not connected.

■ HD614080SC40 (IC204)

(1) **Overview:**

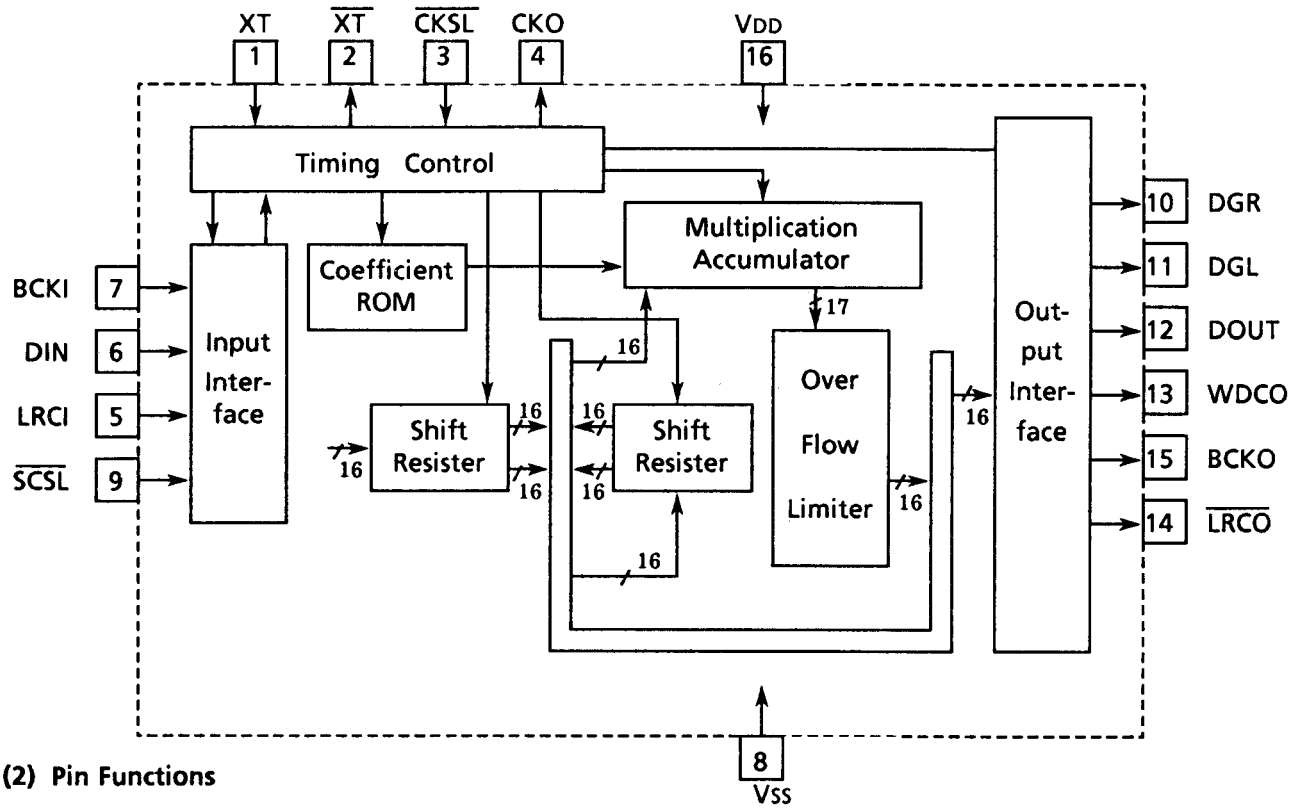
This LSI is a C-MOS 4-bit single-chip microcomputer. It includes 8192 words by 10 bits of ROM, 512 digits by 4 bits of RAM, input/output ports, timer/counters, and a serial interface. Its main functions are input from and control of mechanical switches, FL display, LED display, and output of operation commands to YMS3815s, etc. and a disk memory microcomputer.

(2) **Pin functions**



■ SM5807EP (IC153): 4 times Oversampling Digital Filter

(1) Block Diagram



(2) Pin Functions

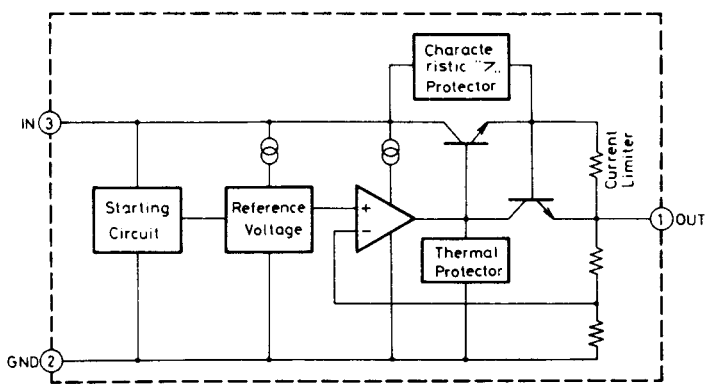
Pin No.	Pin Name	I/O	Function
1	XT	I	Input pin for oscillator .
2	$\overline{XT}$	O	When CKSL is high, output pin for oscillator. When CKSL is low, this pin is open.
3	$\overline{CKSL}$	I(PU)	When CKSL is high, input pin for the crystal oscillator. (16.9344MHz or 17.2872 MHz) When CKSL is low, input pin for the clock. (8.4672MHz or 8.6436MHz)
4	CKO	O	Output pin for the clock frequency.
5	LRCI	I(PU)	Input pin for the synchronizing signal. (44.1KHz)
6	DIN	I(PU)	Input pin for the serial data.
7	BCKI	I(PU)	Input pin for the serial. (Bit clock)
8	VSS		Circuit ground potential.
9	$\overline{SCSL}$	I(PU)	When SCSL is high, system clock is 192fs When SCSL is low, system clock is 196fs.
10	DGR	O	Output pin for the deglitch signal of the right channel.
11	DGL	O	Output pin for the deglitch signal of the left channel.
12	DOUT	O	Output pin for the serial data.
13	WDCO	O	Clock of output control. (352.8KHz)
14	$\overline{LRCO}$	O	Clock of output control. (176.4KHz)
15	BCKO	O	Input pin for the serial. (Bit clock 8.4672MHz or 8.6436MHz)
16	VDD		+5V power supply pin.

Internal Block Diagrams for the Other Main ICs

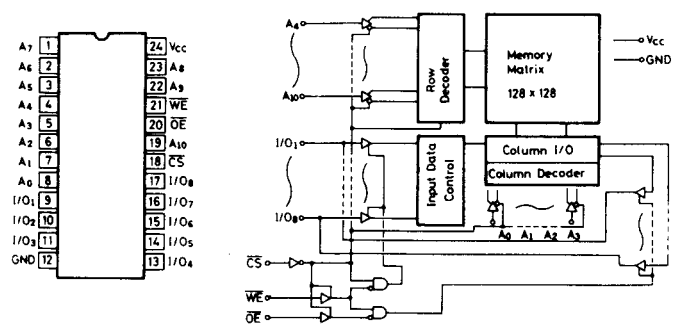
■ μPD75108CW-207 (IC201) ..... Disk memory microcomputer

Compu-Link signal input	DCS in	→	1	64		Vss	Ground
Ground	GND		2	63	→	DCS out	Compu-Link signal output
Remote-control signal	RM in	→	3	62	→	cs	Address (IC202)
Power off detection signal for backup	POWER OFF	→	4	61	→	we	Address (IC202)
			5	60	→	A12	Address (IC202)
Initial message selective signal	JVC/VICTOR	→	6	59	→	A8	Address (IC202)
Ground	GND		7	58	→	A9	Address (IC202)
Random timer play input	R.T.PLAY	→	8	57	→	A10/KEY OUT 8	Address (IC202)/Key output
Ground	GND		9	56	→	A11/KEY OUT 9	Address (IC202)/Key output
Ground	GND		10	55	→	A4/KEY OUT 4	Address (IC202)/Key output
Fl driver (IC203) interface	SCK	↔	11	54	→	A5/KEY OUT 5	Address (IC202)/Key output
Fl driver (IC203) interface	DATA	↔	12	53	→	A6/KEY OUT 6	Address (IC202)/Key output
Fl driver (IC203) interface	STB	↔	13	52	→	A7/KEY OUT 7	Address (IC202)/Key output
Fl driver (IC203) interface	RESET OUT	↔	14	51	→	A0/KEY OUT 0	Address (IC202)/Key output
Key in signal	KEY in 3	→	15	50	→	A1/KEY OUT 1	Address (IC202)/Key output
Key in signal	KEY in 2	→	16	49	→	A2/KEY OUT 2	Address (IC202)/Key output
Key in signal	KEY in 1	→	17	48	→	A3	Address (IC202)
Key in signal	KEY in 0	→	18	47	←	X1	Input pin for oscillator
Output pin for volume control	VOL UP	←	19	46	→	X2	Output pin for oscillator
Output pin for volume control	VOL DOWN	←	20	45	←	RESET IN	Reset signal input
Output pin for fl off signal	FL OFF	←	21	44	↔	D1	Data bus (IC202)
Volume indicator output	VOL.P.IND	←	22	43	↔	D2	Data bus (IC202)
Ground	GND		23	42	↔	D3	Data bus (IC202)
Mech. control (IC204) interface	M.INH	↔	24	41	↔	D4	Data bus (IC202)
Mech. control (IC204) interface	S.REQ	↔	25	40	↔	D5	Data bus (IC202)
Mech. control (IC204) interface	S.READY	↔	26	39	↔	D6	Data bus (IC202)
Mech. control (IC204) interface	M.REQ	↔	27	38	↔	D7	Data bus (IC202)
Mech. control (IC204) interface	M.READY	↔	28	37	↔	D8	Data bus (IC202)
Ground	GND		29	36	↔	DATA 0	Mech. control data bus (IC204)
Ground	GND		30	35	↔	DATA 1	Mech. control data bus (IC204)
Positive power supply (+5V)	Vdd		31	34	↔	DATA 2	Mech. control data bus (IC204)
Positive power supply (+5V)	Vdd		32	33	↔	DATA 3	Mech. control data bus (IC204)

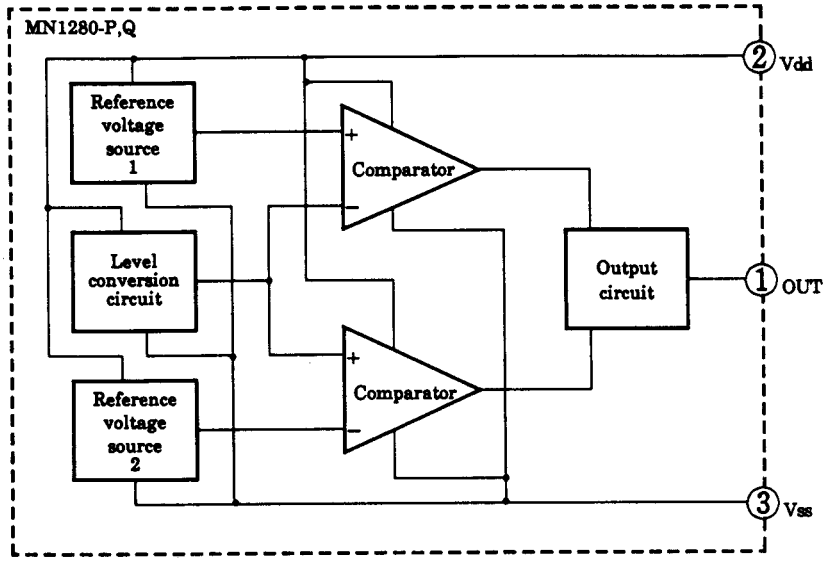
■ NJM78M05 (IC105, IC106) ..... 3-pin regulator (5 V)



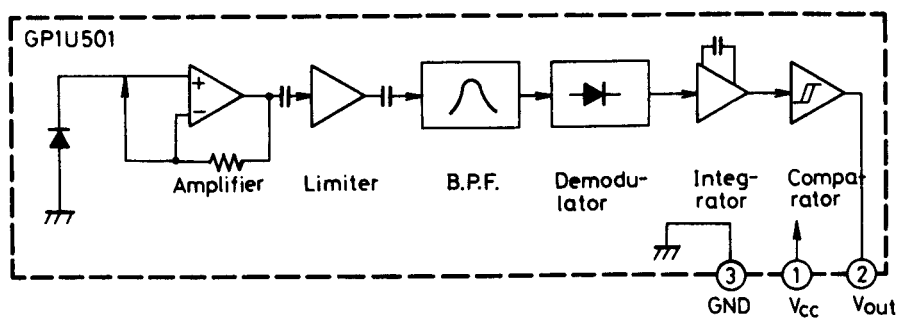
■ LC3517BS-15 (IC403) ..... Static RAM



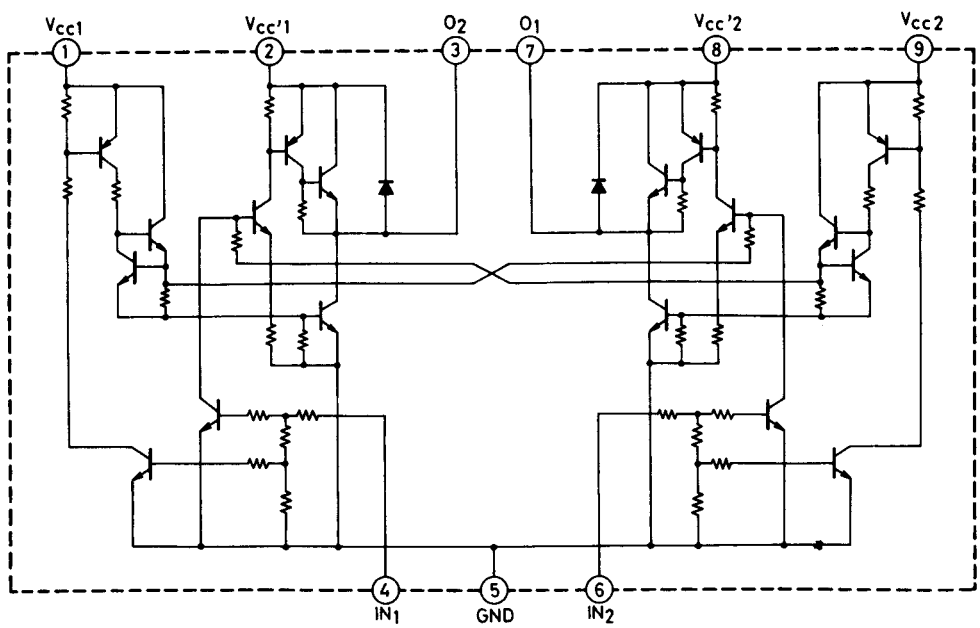
■ MN1280 (IC202) ..... Preset IC



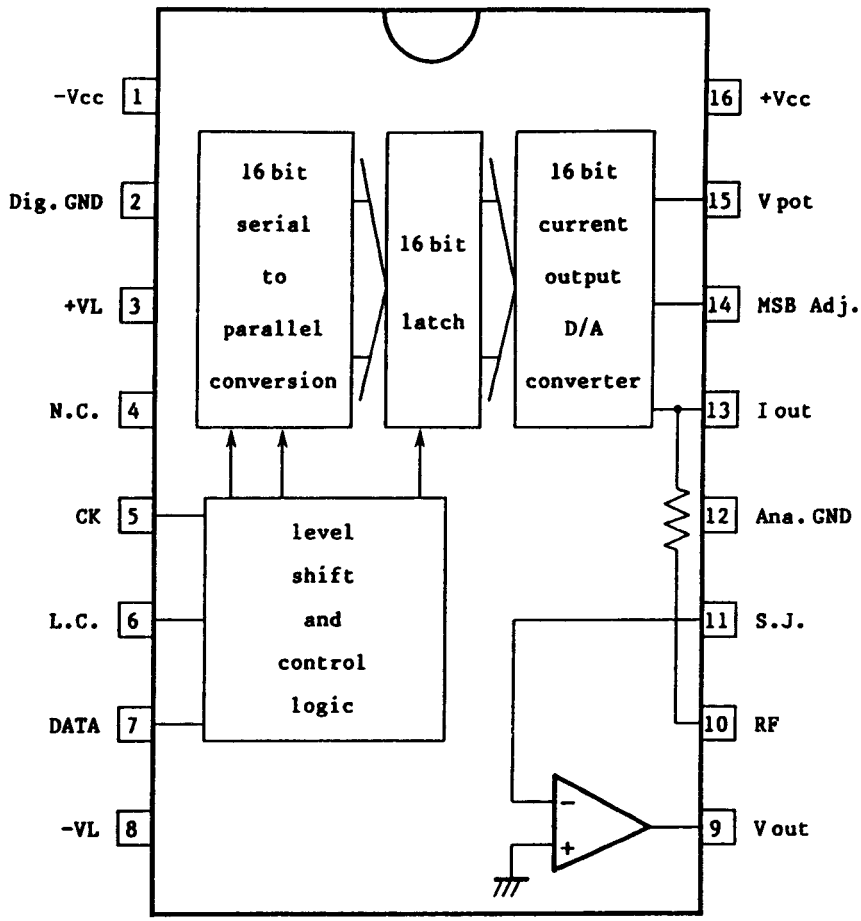
■ GP1U501V (IC205) ..... Remote control reception IC



■ M54543L (IC971) ..... Motor Drive IC

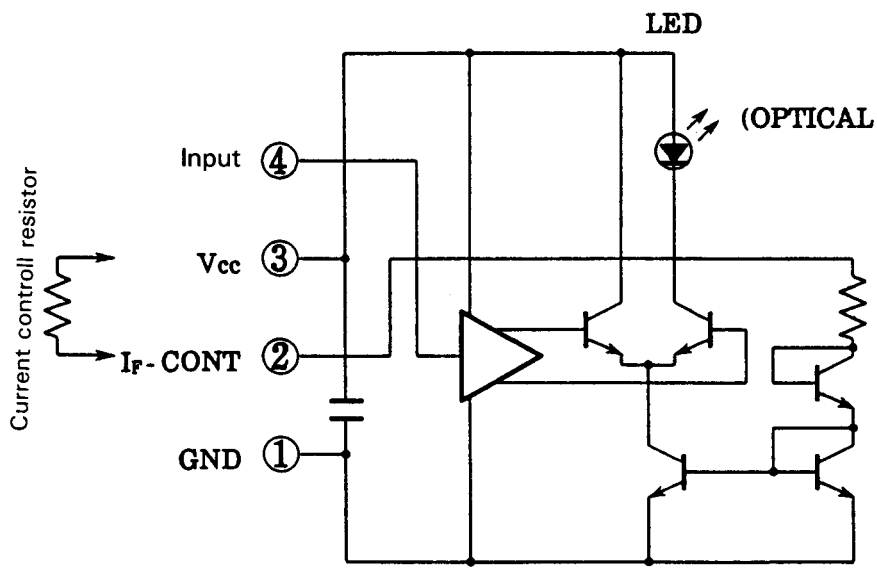


■ PCM56P (IC301, IC302) ..... D/A Converter



Internal Circuits for the Phototransmission Module

■ TOTX172 (P152)

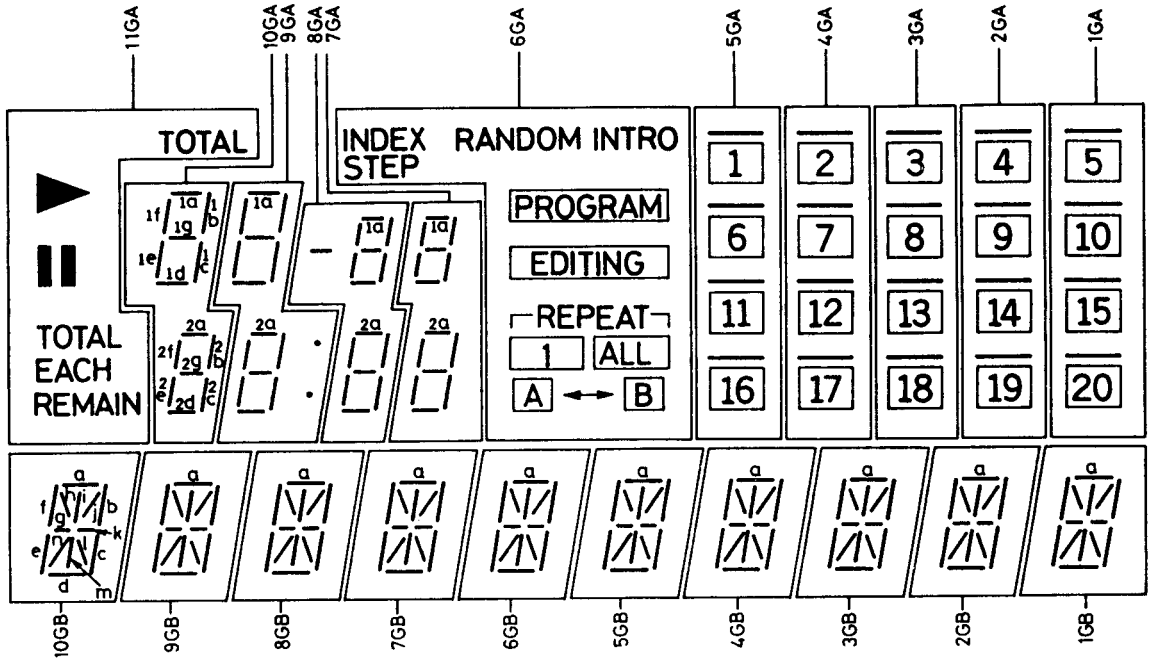


Pin No.	Function
1	GND
2	LED current limiting
3	Vcc
4	Input

Internal Connections for the FL Display Tube

■ FL201: ELU0001-050

(1) Grid partitioning



(2) Pin connections

Pin No.			19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Electrode			c	n	l	m	d	10GB	9GB	8GB	7GB	6GB	5GB	4GB	3GB	2GB	1GB	NP	NP	F	F

Pin No.		38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	
Electrode		10GA	9GA	8GA	7GA	6GA	5GA	4GA	3GA	2GA	1GA	a	i	j	h	b	f	g	k	e	

Pin No.	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39		
Electrode	F	F	NP	NP	S14	S13	S12	S11	S10	S9	S8	S7	S6	S5	S4	S3	S2	S1	11GA		

Note: P = filament (F) S: Segment G: grid MP: no pin

(3) Anode connection table

\	11GA	10GA	9GA	8GA	7GA	6GA	5GA	4GA	3GA	2GA	1GA
S1		1a	1a	1a	1a						
S2		1b	1b	1b	1b						
S3	TOTAL (Up)	1f	1f	1f	1f	INTRO	— (1)	— (2)	— (3)	— (4)	— (5)
S4	▶	1g	1g	1g	1g	RANDOM	▭ (1)	▭ (2)	▭ (3)	▭ (4)	▭ (5)
S5	❚❚	1c	1c	1c	1c	INDEX	1	2	3	4	5
S6	TOTAL (Down)	1e	1e	1e	1e	STEP	— (6)	— (7)	— (8)	— (9)	— (10)
S7	EACH	1d	1d	1d	1d	PROGRAM	▭ (6)	▭ (7)	▭ (8)	▭ (9)	▭ (10)
S8	REMAIN	2a	2a	2a	2a	EDITING	6	7	8	9	10
S9		2b	2b	2b	2b	⌐REPEAT¬	— (11)	— (12)	— (13)	— (14)	— (15)
S10		2f	2f	2f	2f	1	▭ (11)	▭ (12)	▭ (13)	▭ (14)	▭ (15)
S11		2g	2g	2g	2g	ALL	11	12	13	14	15
S12		2c	2c	2c	2c	A ⟷	— (16)	— (17)	— (18)	— (19)	— (20)
S13		2e	2e	2e	2e	B	▭ (16)	▭ (17)	▭ (18)	▭ (19)	▭ (20)
S14		2d	2d	2d	2d		16	17	18	19	20

Disassembly Procedures

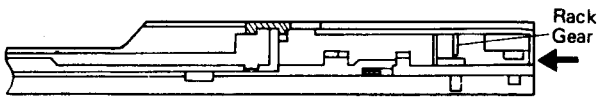
(1) Top cover removal

1. Remove the two screws on each side and the two screws on the rear.
2. Pull the top cover slightly backward and lift it while spreading the back of the left and right sides to remove it.

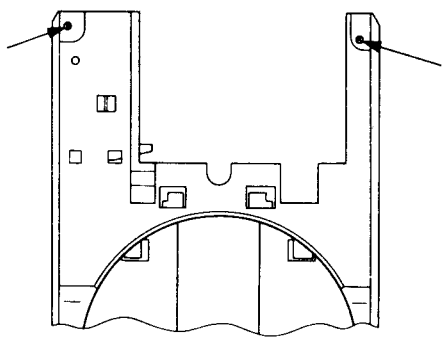
(2) Tray assembly removal

1. Remove the top cover as described in (1).
2. Turn the power on and press the OPEN/CLOSE button to move the tray out. Now turn the power off.

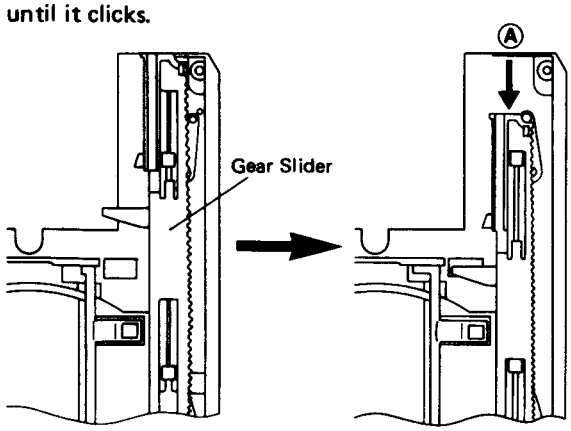
Note: If the power cannot be turned on due to a malfunction, push the rear end of the rack gear toward front forcibly to move out the tray.



3. Remove the tray retaining screws and remove the tray by pulling it forward.



4. When reassembling, if the gear slider is not fully forward, slide it forward (in the direction of the arrow Ⓐ) until it clicks.



(3) Front panel assembly removal

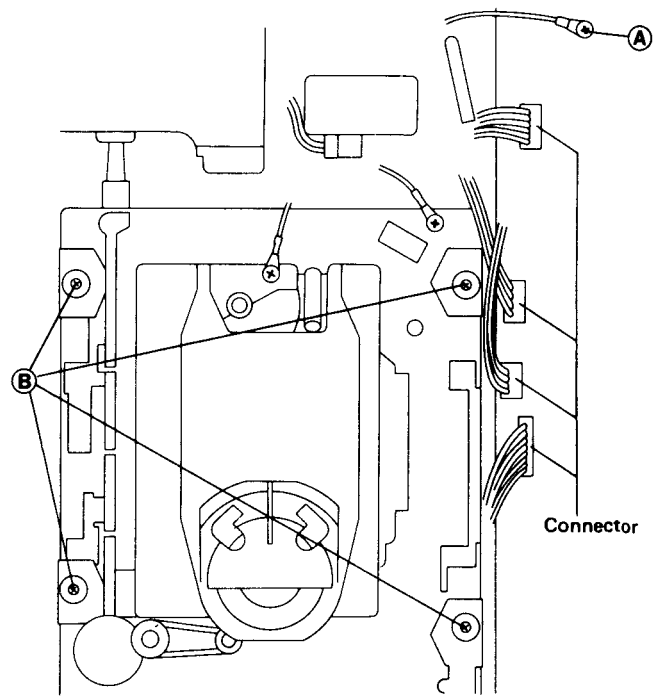
1. Remove the top cover as described in (1), and the tray assembly as described in (2).
2. Remove the plastic rivets on the left and right sides.
3. Now lift so the bottom panel is accessible and remove the three screws from the bottom of the front panel.
4. The front panel can now be detached; release the claws holding the switch PC board to remove completely.

(4) Main PC board removal

1. Remove the front panel assembly as described in (3).
2. Remove the four screws retaining the main printed circuit board; one of these is used to fasten the lug at the end of the ground lead from the mechanism.
3. Remove the two screws securing the output terminals and the COMPU LINK/SYNCHRO terminal on the rear panel.
4. Remove three plastic rivets retaining switch PC board (lower) to the chassis, and remove the switch PC board from the chassis by releasing the catch securing the switch PC board.
5. Lift up the main PC board to remove it.

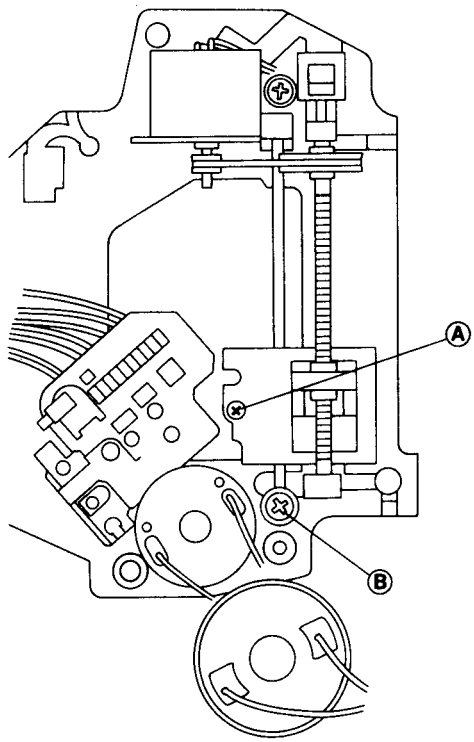
(5) Mechanism assembly removal

1. Remove the top cover as described in (1), and the tray assembly as described in (2).
2. Unplug the two green socket connectors and release the two other connectors from the PCB by lifting their catches with a screwdriver.
3. Unscrew the ground connector from the PCB. (Ⓐ)
4. Remove the four copper-plated screws Ⓑ connecting the mechanism assembly to the chassis and lift the mechanism assembly to remove it.



(6) Laser pickup removal

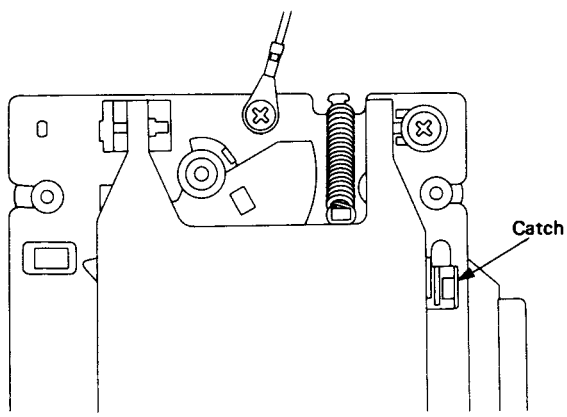
1. Remove the top cover, tray assembly and the mechanism assembly as described above.
2. Turn the mechanism upside down.
3. Remove the screw Ⓐ from the center of the pickup base assembly.
4. Lift the pickup base and slide to remove it.
5. Slide the pickup assembly to the center and remove the washer-head screw Ⓑ retaining the pickup assembly and sliding shaft.



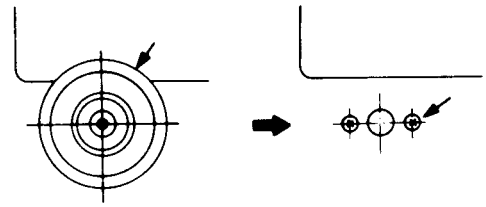
Note:
When disassembling and reassembling, be careful not to get grease on the rubber belt that runs round the pulley.

(7) Spindle motor removal

1. Remove the mechanism assembly as described above.
2. Release the catch holding the disc clamper, and raise the disc clamper straight up (at a right angle).

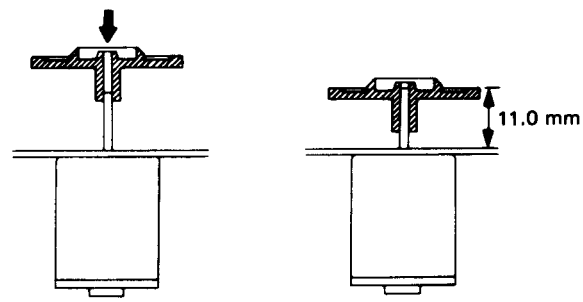


3. Remove the turntable, and remove the two screws retaining the spindle motor.

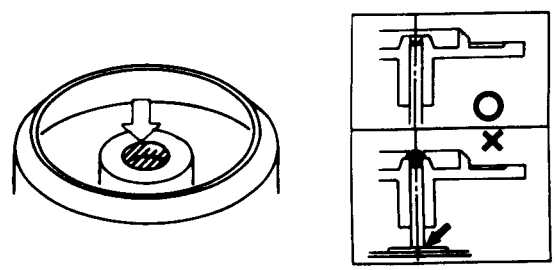


Note: Installation of the spindle motor

1. Secure the two screws, applying uniform tightening torque.
2. Insert the turntable by pressing it.
   The turntable must be inserted straight while supporting the motor at its lowest section; alignment must be accurate to obtain a height of 11.0 mm above the top surface of the mechanism base.

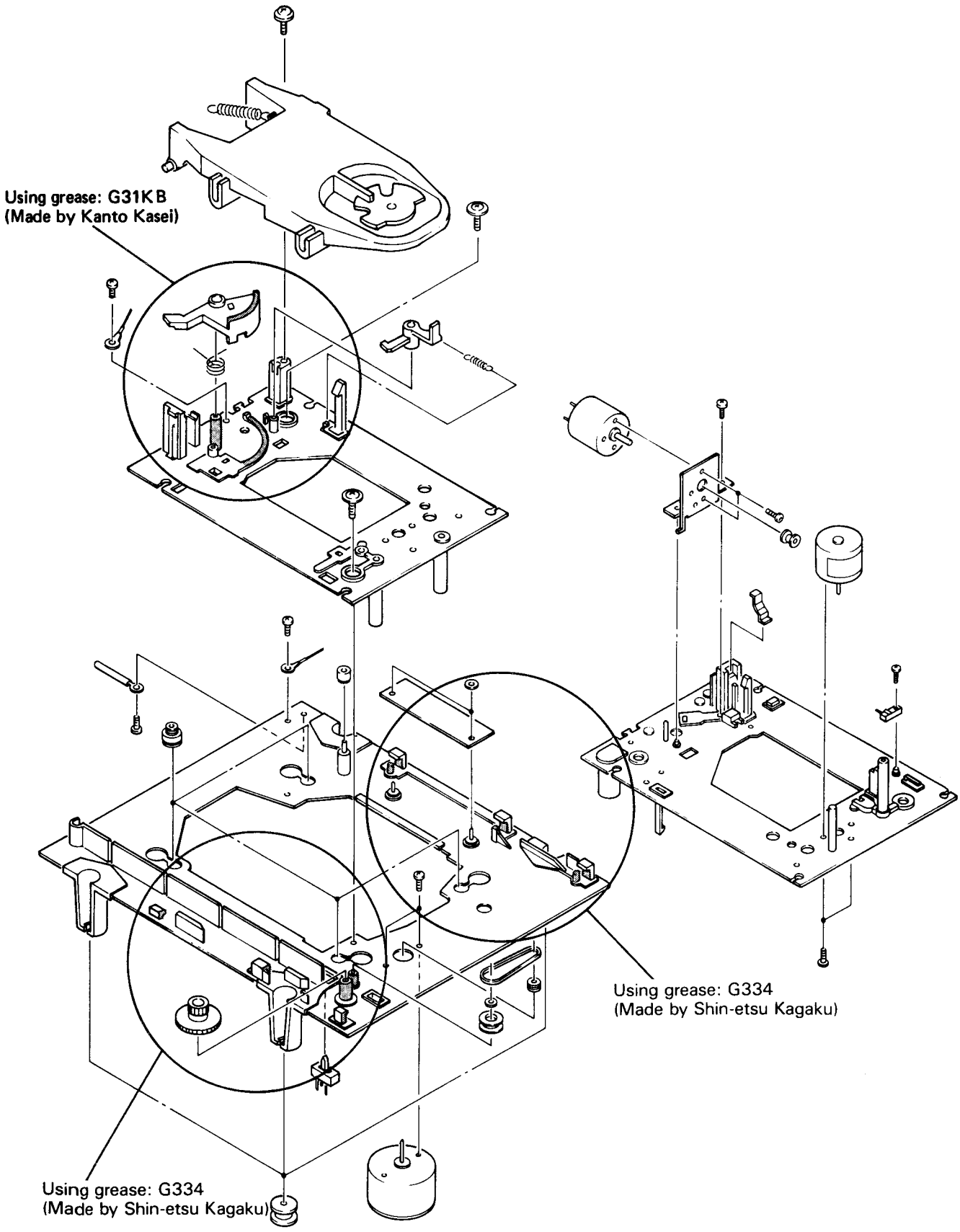


3. After insertion is complete, bond the motor shaft and turntable together (at the section marked by an arrow in the figure on the left below).



Use "LOCKTITE #460" boanding agent and use as little as possible. Take care not to allow any excess bonding agent to get onto the turntable, as shwn in the figure (above). Be extremely careful not to allow bonding agent to adhere to the motor bearings (section marked by an arrow in the figure on the right above).

Application Points for Grease



Pick Up Maintenance

(1) Laser diode lifespan

• Measuring with a laser power meter

1. Remove the flat wires from the sockets (P202, P203, and P204) on the main board.
2. Connect the foot (LON) on the inside of the C132 board to W404 (+5 V line).
3. Switch on the power and measure the laser power of the pick up.

• When there is no laser power meter

1. Switch on the power and mount a disk.
2. Press the PLAY button and play a song.
3. Connect an oscilloscope to test point TP6 (RF) and measure the EFM output.

• If the measured value is as shown in the table below, then the laser diode may have worn out, so replace it according to the procedure given in the next section.

Measurement	Measurement equipment	Measurement value
Laser power	Laser power meter	0.1 mW or less
EFM output (I pattern amplitude)	Oscilloscope	1.5 V or less

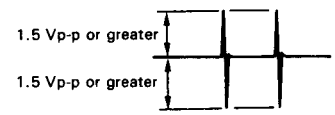
(2) Semi-fixed resistors on the APC board

The semi-fixed resistors on the APC board are for adjusting the laser power. Since this adjustment adjusts these resistors as a pair to match the characteristics of the optical block, do not touch these semi-fixed resistors at all. If the laser power is too low, this means that the laser diode has worn out, so replace the pick up.
Turning a semi-variable resistor for a normal pick up can destroy the pick up with excess current.

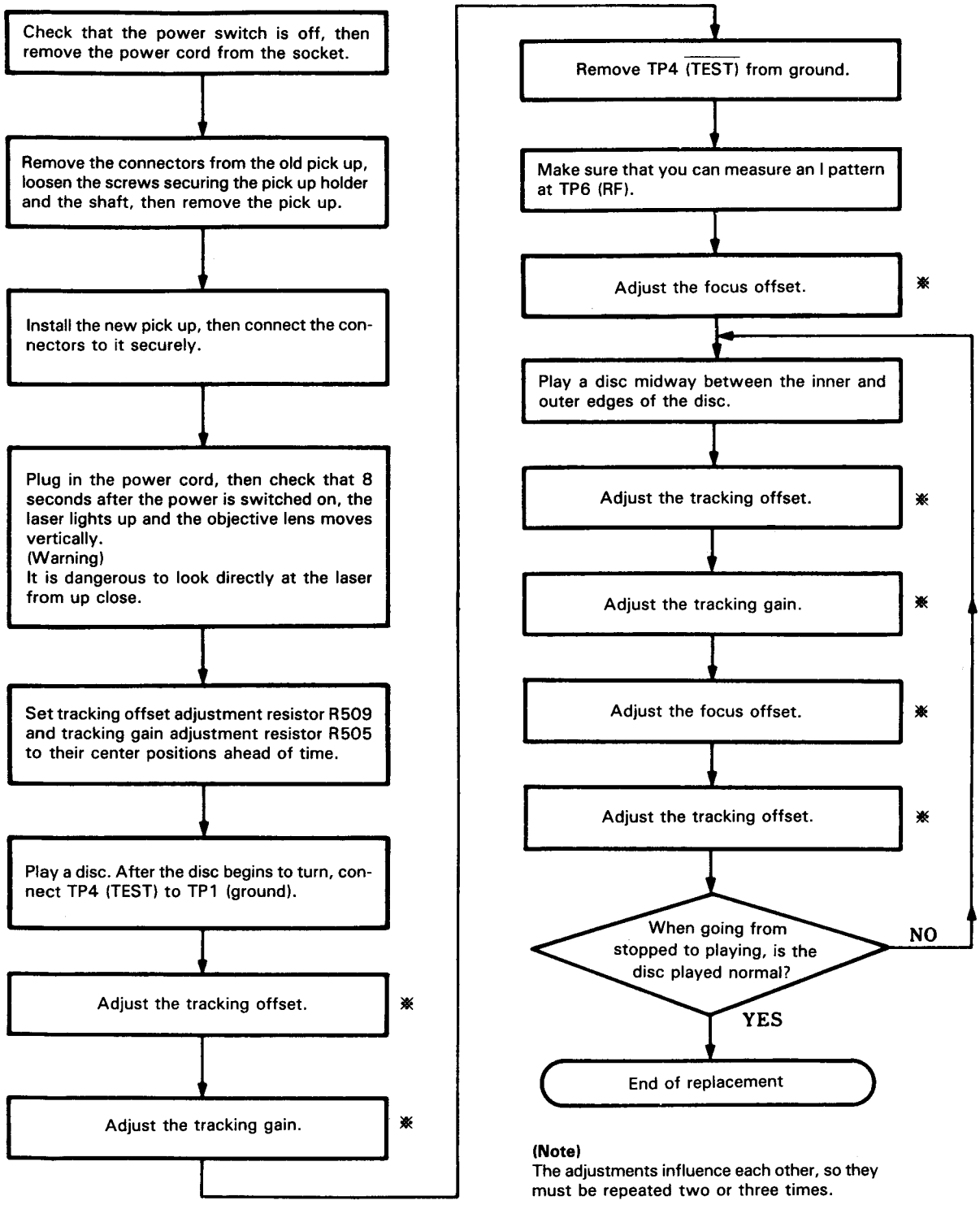
(3) Changes in the optic system with time

• How to judge whether the optical system is ok or not

1. Connect an oscilloscope to TP5 (FE) and TP1 (ground).
2. Short R572 with a shorting pin, etc. (See the diagram on the previous page.)
3. Switch on the power and verify that the FE output is greater than ±1.5 Vp-p. (Set the oscilloscope's time measurement to 0.5 second.) If the FE output is less than ±1.5 Vp-p, the optical system is no good.



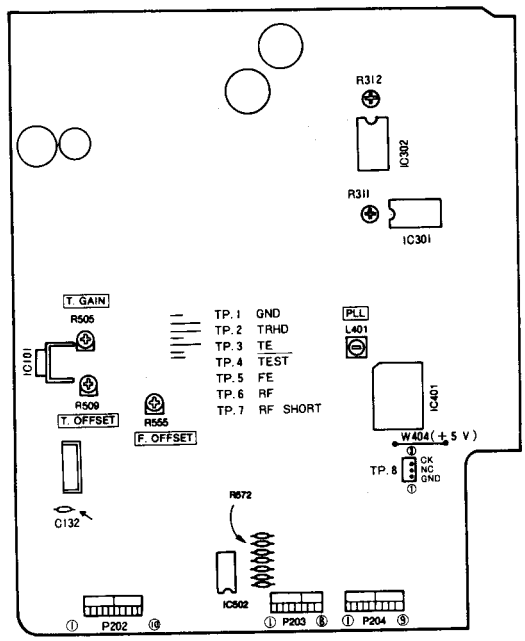
Pick Up Replacement Procedure


Check that the power switch is off, then remove the power cord from the socket.
Remove the connectors from the old pick up, loosen the screws securing the pick up holder and the shaft, then remove the pick up.
Install the new pick up, then connect the connectors to it securely.
Plug in the power cord, then check that 8 seconds after the power is switched on, the laser lights up and the objective lens moves vertically.
(Warning)
It is dangerous to look directly at the laser from up close.
Set tracking offset adjustment resistor R509 and tracking gain adjustment resistor R505 to their center positions ahead of time.
Play a disc. After the disc begins to turn, connect TP4 (TEST) to TP1 (ground).
Adjust the tracking offset. ※
Adjust the tracking gain. ※
Remove TP4 (TEST) from ground.
Make sure that you can measure an I pattern at TP6 (RF).
Adjust the focus offset. ※
Play a disc midway between the inner and outer edges of the disc.
Adjust the tracking offset. ※
Adjust the tracking gain. ※
Adjust the focus offset. ※
Adjust the tracking offset. ※
When going from stopped to playing, is the disc played normal?
NO
YES
End of replacement

(Note)
The adjustments influence each other, so they must be repeated two or three times.

* See the section that explains how to carry out this adjustment.

Adjustment Procedures



(1) PLL freerunning adjustment

1) Adjustment instrument
   Frequency counter
2) Adjustment procedure
   1. Connect a frequency counter between TP8-③ (CK) and TP8-① (GND) on the main PC board.
   2. Short TP7 (RF SHORT) and TP1 (GND).
   3. Using the alignment rod, adjust L401 for a frequency counter reading of 4.305±0.001 MHz.
   4. Perform this adjustment immediately after the power is turned on.

(2) Focus offset adjustment

1) Adjustment instruments
   Oscilloscope, Normal disc
2) Adjustment procedure
   1. Connect an oscilloscope between TP6 (RF) and TP1 (GND) on the main PC board.
   2. Play the disc.
   3. Adjust R555 so that the amplitude of the RF signal (waveform on the oscilloscope) becomes maximum with the clearest possible waveform.

(3) Tracking gain adjustment

1) Adjustment instruments
   Oscilloscope, Normal disc
2) Adjustment procedure
   1. Connect an oscilloscope between TP3 (TE) and TP1 (GND) on the main PC board.
   2. Play the disc.
   3. Short TP4 ($\overline{\text{TEST}}$) to TP1 (GND).
   4. Adjust R505 so that the tracking error signal (waveform on the oscilloscope) is 1.8 Vp-p.

(4) Tracking offset adjustment

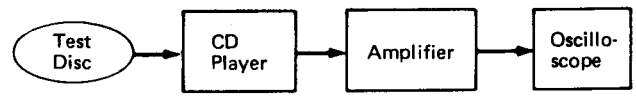
1) Adjustment instruments
   Oscilloscope, Normal disc
2) Adjustment procedure
   1. Connect an oscilloscope between TP3 (TE) and TP1 (GND) on the main PC board.
   2. Play the disc.
   3. Short TP4 ($\overline{\text{TEST}}$) to TP1 (GND).
   4. Adjust R509 so that the DC level of the tracking error signal (waveform on the oscilloscope) becomes 0.

   Note: Adjust R509 so that the waveform becomes symmetrical around the 0 level.

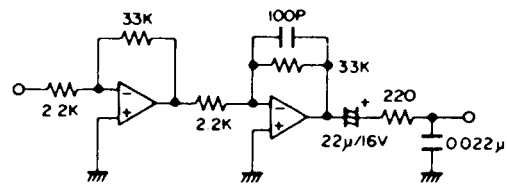
(5) Zero-Cross Distortion Adjustment (MSB*)

1) Adjustment instrument
   Oscilloscope, Test disc (CRG1106), Amplifier (amplification of approx. 47 dB)
2) Adjustment procedure
   1. Connect an amplifier and an oscilloscope to the output of the player.
   2. Turn the POWER switch ON.
   3. Load the test disc and play track 9 (1 kHz, -60 dB).
   4. Adjust R311 and R312 (MSB) so that the correct sine wave as shown in the figure is obtained.

   *MSB: Most Significant Bit



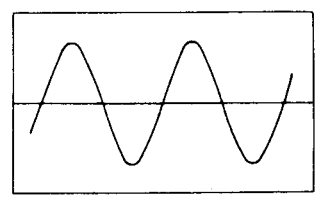
* The amplifier can be replaced with a level meter, etc.



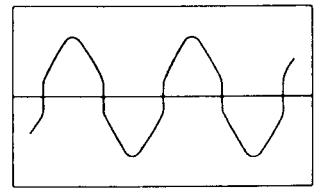
Recommended amplifier circuit (approx. 47 dB)

* Use NJM4560DX or M5220 for op amp.

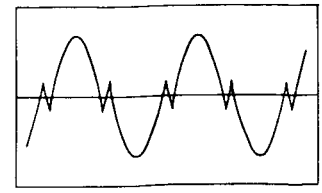
Zero-cross distortion waveform



OK

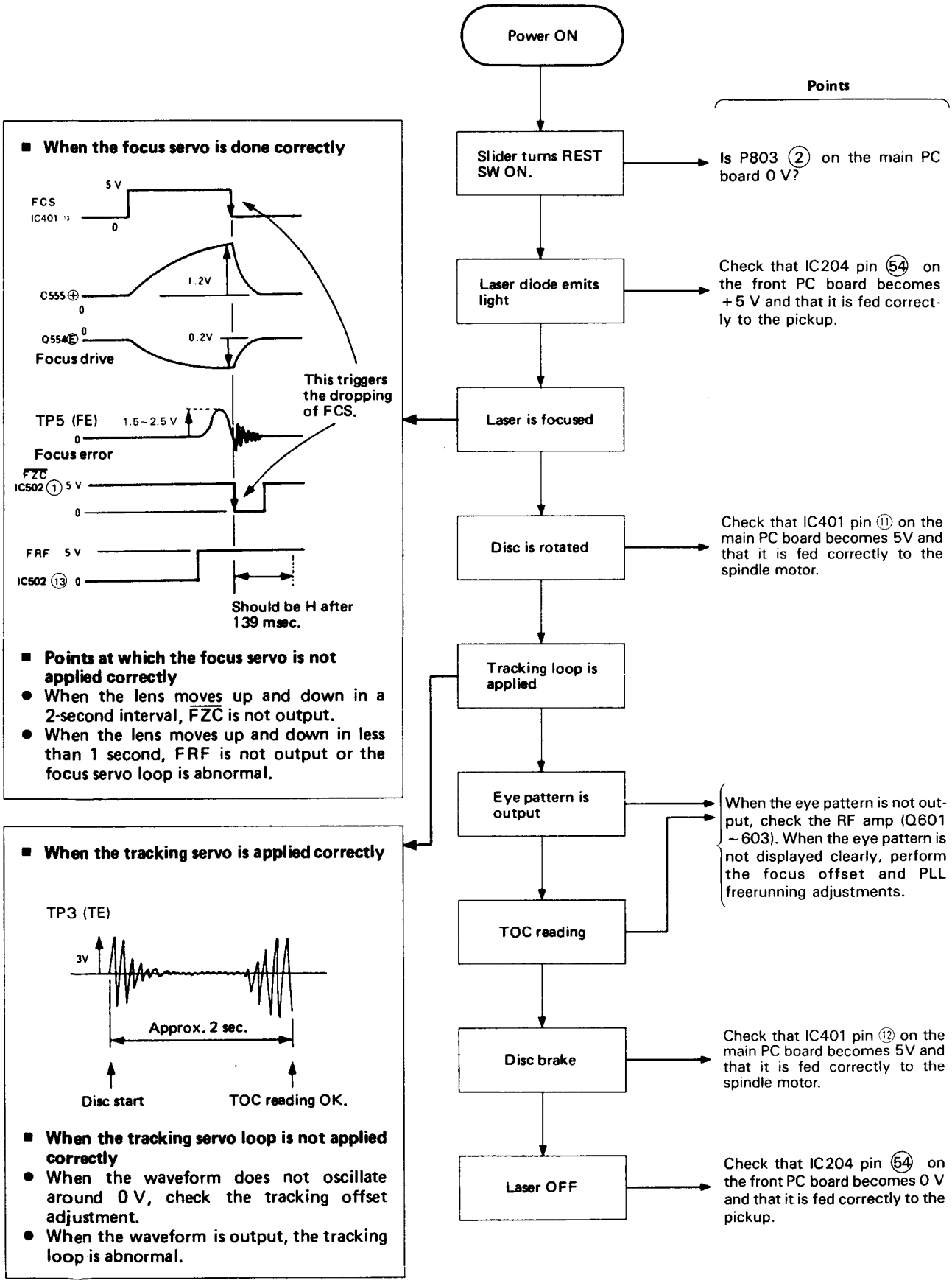


Unacceptable



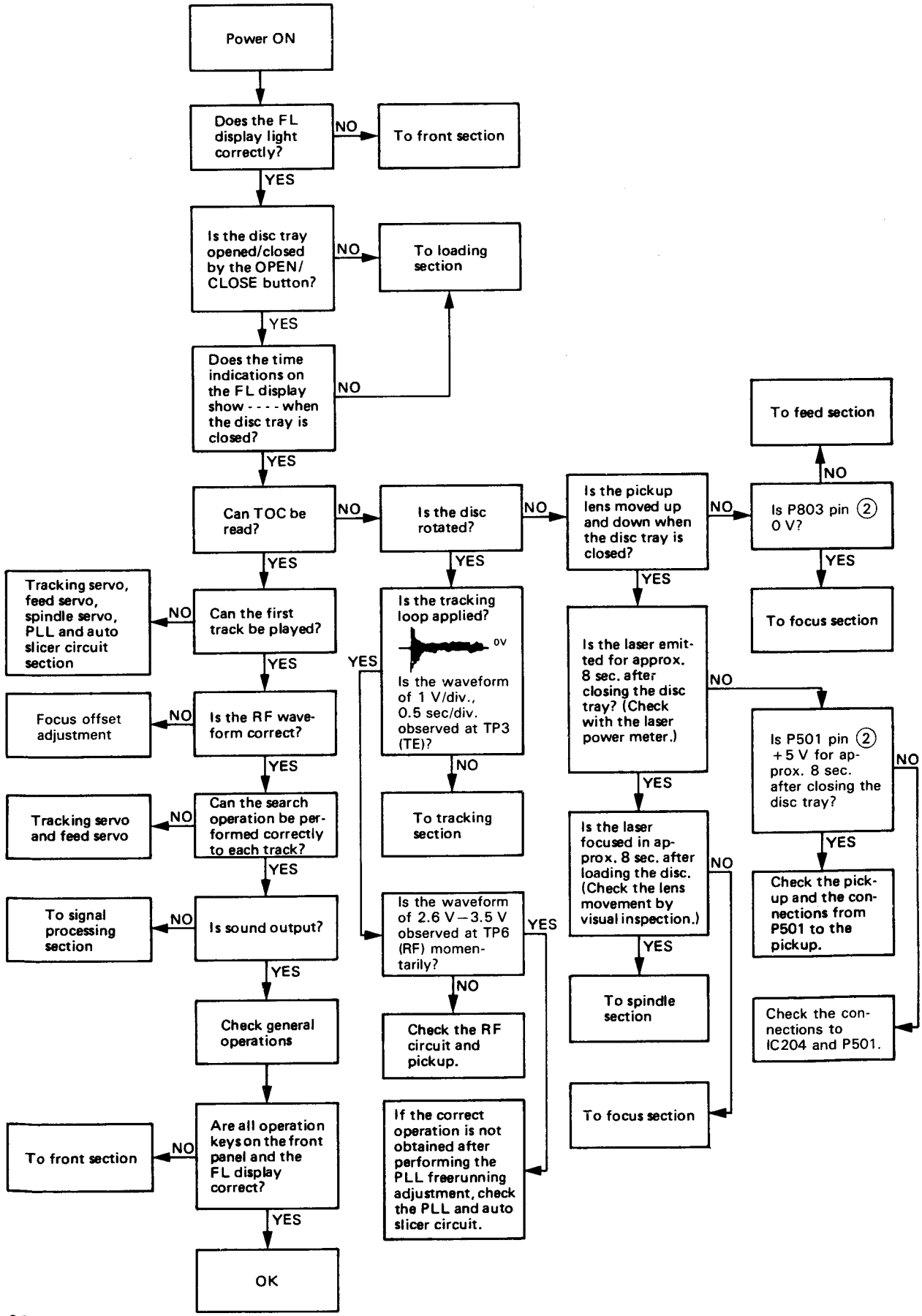
Unacceptable

Flow of Operation Until TOC is Read

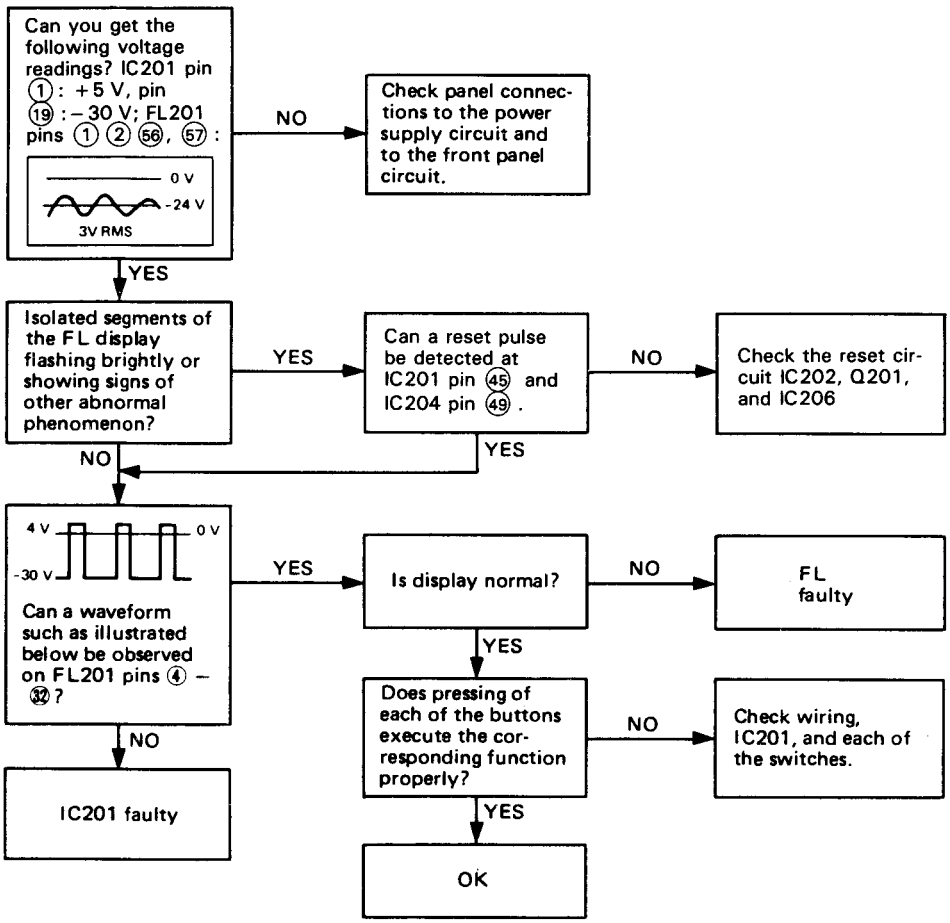

Power ON
Points
Slider turns REST SW ON.
Is P803 (2) on the main PC board 0 V?
Laser diode emits light
Check that IC204 pin (54) on the front PC board becomes +5 V and that it is fed correctly to the pickup.
Laser is focused
Disc is rotated
Check that IC401 pin (11) on the main PC board becomes 5V and that it is fed correctly to the spindle motor.
Tracking loop is applied
Eye pattern is output
When the eye pattern is not output, check the RF amp (Q601 ~ 603). When the eye pattern is not displayed clearly, perform the focus offset and PLL freerunning adjustments.
TOC reading
Disc brake
Check that IC401 pin (12) on the main PC board becomes 5V and that it is fed correctly to the spindle motor.
Laser OFF
Check that IC204 pin (54) on the front PC board becomes 0 V and that it is fed correctly to the pickup.
■ When the focus servo is done correctly
5 V
FCS
IC401 13
0
1.2V
C555 ⊕
0
Q554 Ⓔ
0
0.2V
Focus drive
This triggers the dropping of FCS.
TP5 (FE)
1.5~2.5 V
0
Focus error
FZC
IC502 (1) 5 V
0
FRF 5 V
IC502 (13) 0
Should be H after 139 msec.
■ Points at which the focus servo is not applied correctly
● When the lens moves up and down in a 2-second interval, FZC is not output.
● When the lens moves up and down in less than 1 second, FRF is not output or the focus servo loop is abnormal.
■ When the tracking servo is applied correctly
TP3 (TE)
3V
Approx. 2 sec.
Disc start
TOC reading OK.
■ When the tracking servo loop is not applied correctly
● When the waveform does not oscillate around 0 V, check the tracking offset adjustment.
● When the waveform is output, the tracking loop is abnormal.

Troubleshooting

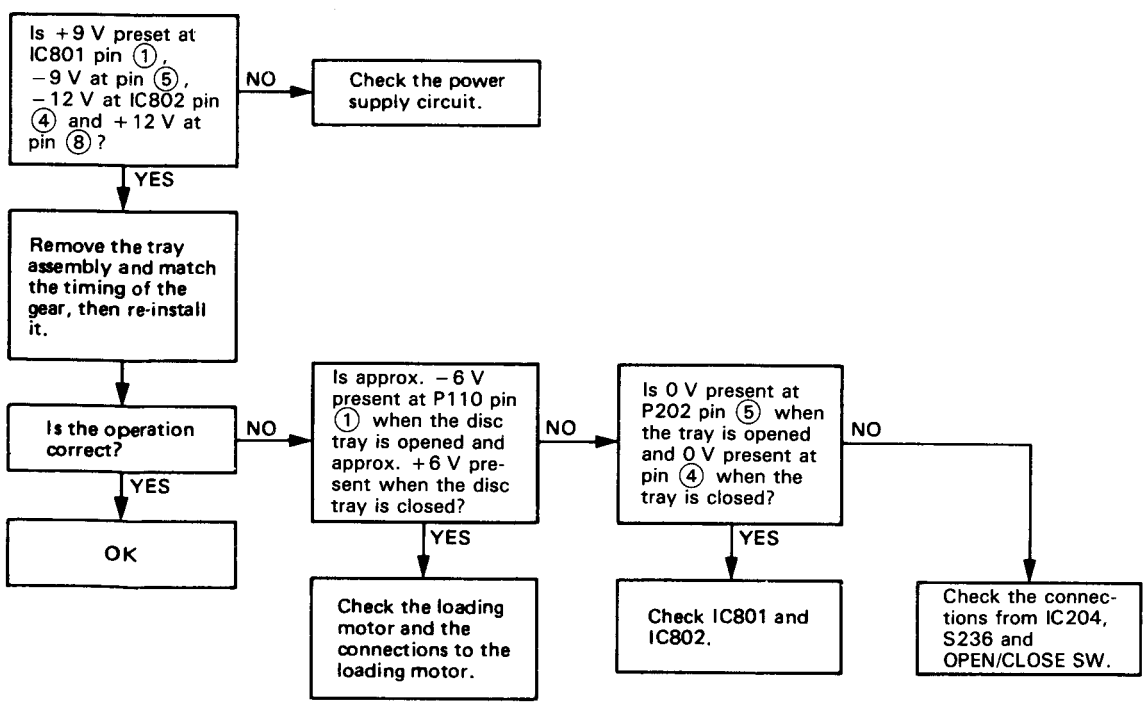
Shows the condition of each circuit from the time when the power is turned on to when play can be started.


Power ON
Does the FL display light correctly?
NO
To front section
YES
Is the disc tray opened/closed by the OPEN/CLOSE button?
NO
To loading section
YES
Does the time indications on the FL display show - - - - when the disc tray is closed?
NO
YES
Can TOC be read?
NO
Is the disc rotated?
NO
Is the pickup lens moved up and down when the disc tray is closed?
NO
Is P803 pin ② 0 V?
NO
To feed section
YES
To focus section
YES
Is the laser emitted for approx. 8 sec. after closing the disc tray? (Check with the laser power meter.)
NO
Is P501 pin ② +5 V for approx. 8 sec. after closing the disc tray?
NO
YES
Check the pick-up and the connections from P501 to the pickup.
Check the connections to IC204 and P501.
YES
Is the laser focused in approx. 8 sec. after loading the disc. (Check the lens movement by visual inspection.)
NO
YES
To spindle section
To focus section
YES
Is the tracking loop applied?
0V
Is the waveform of 1 V/div., 0.5 sec/div. observed at TP3 (TE)?
NO
To tracking section
YES
Is the waveform of 2.6 V–3.5 V observed at TP6 (RF) momentarily?
YES
NO
Check the RF circuit and pickup.
If the correct operation is not obtained after performing the PLL freerunning adjustment, check the PLL and auto slicer circuit.
Tracking servo, feed servo, spindle servo, PLL and auto slicer circuit section
NO
Can the first track be played?
YES
Focus offset adjustment
NO
Is the RF waveform correct?
YES
Tracking servo and feed servo
NO
Can the search operation be performed correctly to each track?
YES
To signal processing section
NO
Is sound output?
YES
Check general operations
To front section
NO
Are all operation keys on the front panel and the FL display correct?
YES
OK

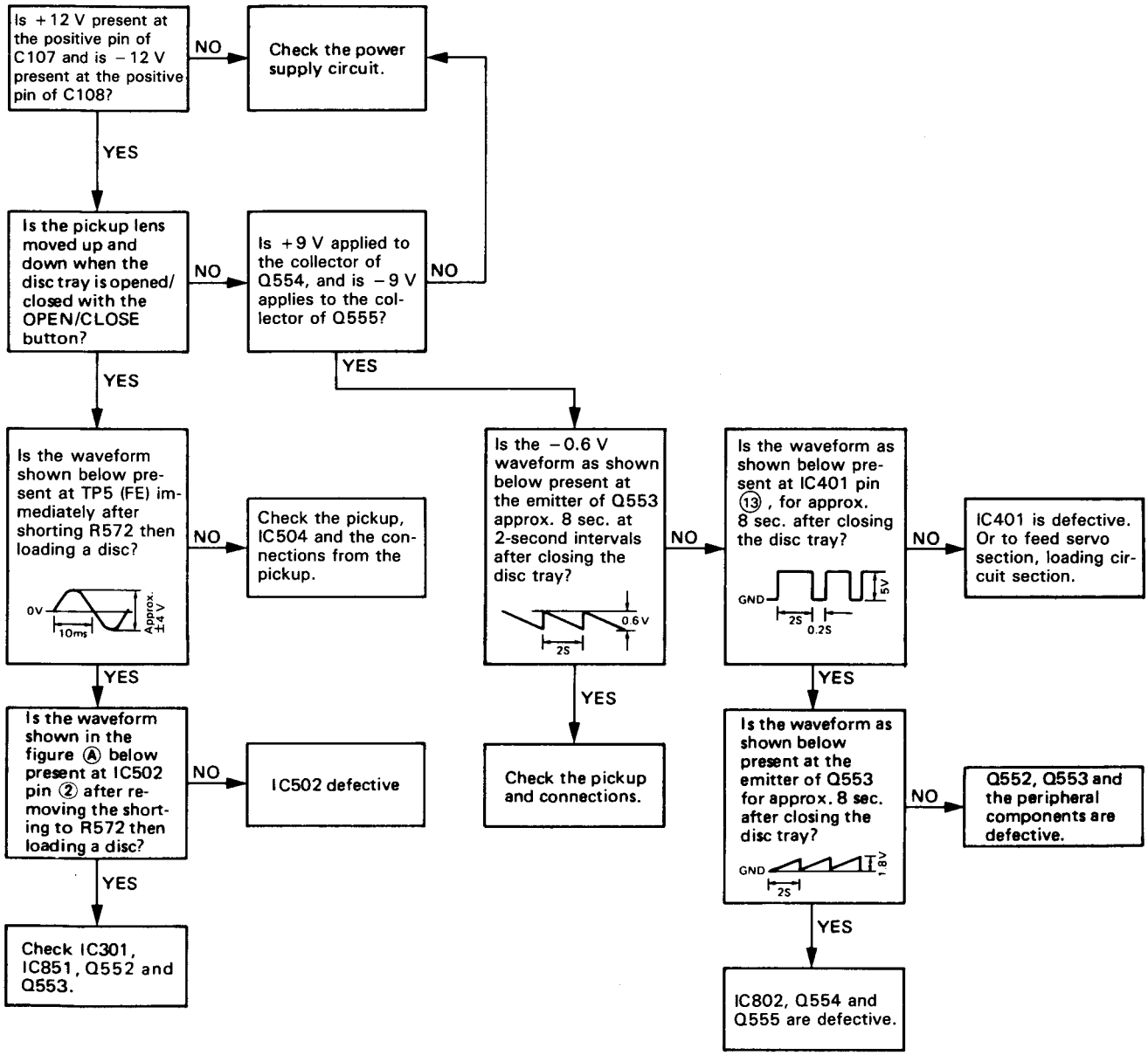
Front circuit section


Can you get the following voltage readings? IC201 pin ①: +5 V, pin ⑲: −30 V; FL201 pins ① ② ⑯, ⑰:
0 V
-24 V
3V RMS
NO
Check panel connections to the power supply circuit and to the front panel circuit.
YES
Isolated segments of the FL display flashing brightly or showing signs of other abnormal phenomenon?
YES
Can a reset pulse be detected at IC201 pin ㊺ and IC204 pin ㊾.
NO
Check the reset circuit IC202, Q201, and IC206
YES
NO
4 V
0 V
-30 V
Can a waveform such as illustrated below be observed on FL201 pins ④ – ㉜?
YES
Is display normal?
NO
FL faulty
YES
Does pressing of each of the buttons execute the corresponding function properly?
NO
Check wiring, IC201, and each of the switches.
YES
OK
NO
IC201 faulty

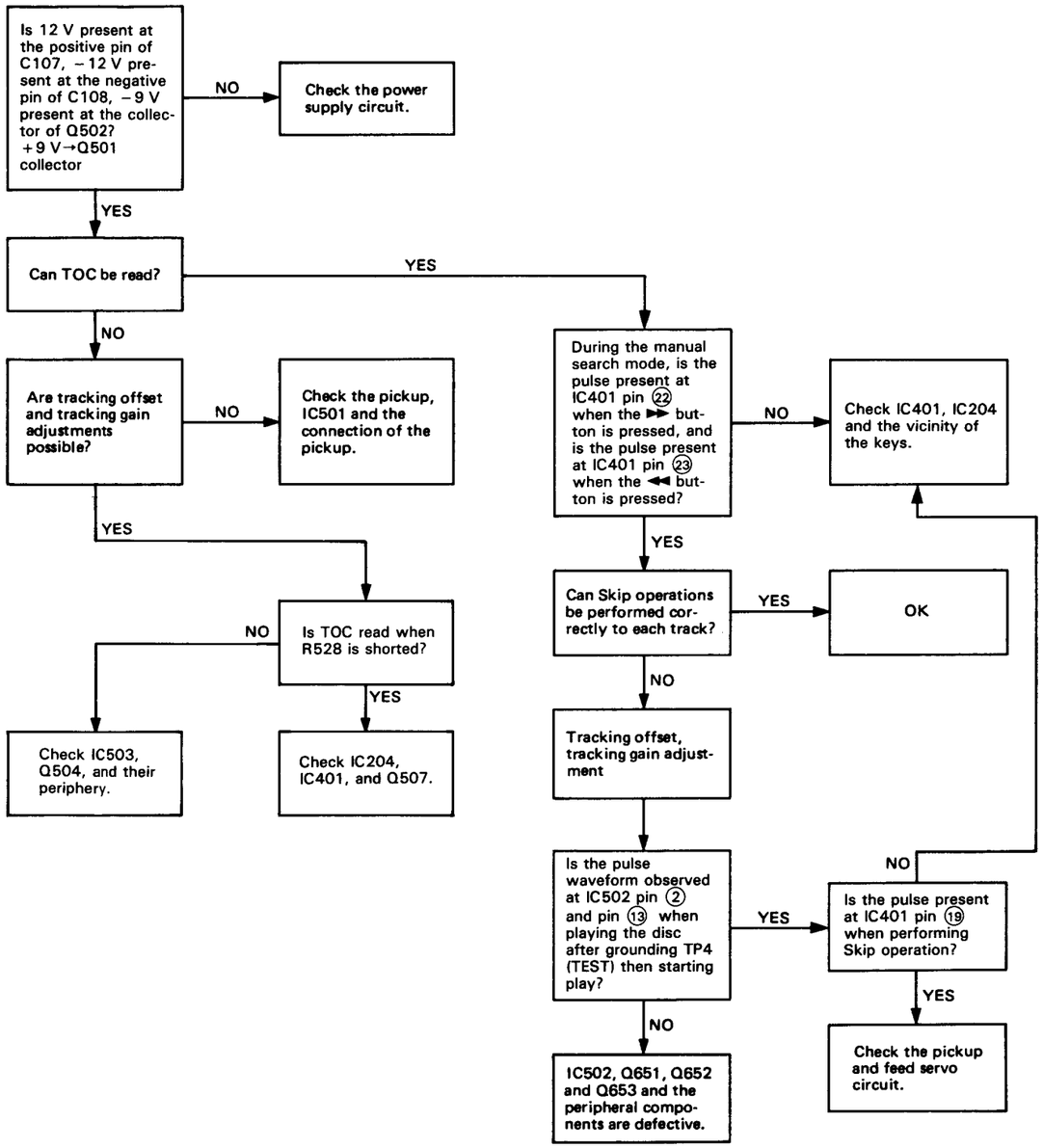
Loading circuit section


Is +9 V preset at IC801 pin ①, −9 V at pin ⑤, −12 V at IC802 pin ④ and +12 V at pin ⑧?
NO
Check the power supply circuit.
YES
Remove the tray assembly and match the timing of the gear, then re-install it.
Is the operation correct?
NO
Is approx. −6 V present at P110 pin ① when the disc tray is opened and approx. +6 V present when the disc tray is closed?
NO
Is 0 V present at P202 pin ⑤ when the tray is opened and 0 V present at pin ④ when the tray is closed?
NO
YES
OK
YES
Check the loading motor and the connections to the loading motor.
YES
Check IC801 and IC802.
Check the connections from IC204, S236 and OPEN/CLOSE SW.

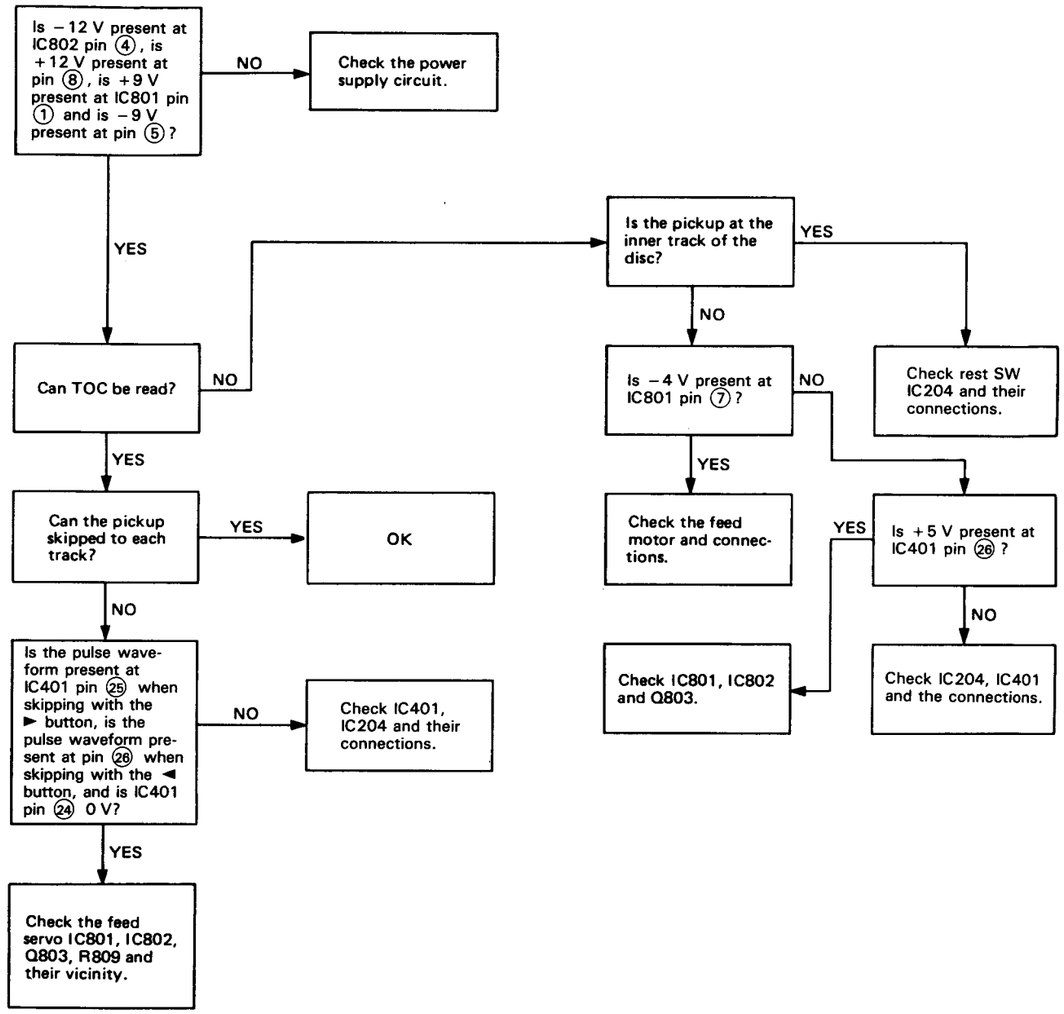
Focus servo circuit section


Is +12 V present at the positive pin of C107 and is −12 V present at the positive pin of C108?
NO
Check the power supply circuit.
YES
Is the pickup lens moved up and down when the disc tray is opened/closed with the OPEN/CLOSE button?
NO
Is +9 V applied to the collector of Q554, and is −9 V applies to the collector of Q555?
NO
YES
YES
Is the waveform shown below present at TP5 (FE) immediately after shorting R572 then loading a disc?
0V
10ms
Approx. ±4 V
NO
Check the pickup, IC504 and the connections from the pickup.
YES
Is the waveform shown in the figure Ⓐ below present at IC502 pin ② after removing the shorting to R572 then loading a disc?
NO
IC502 defective
YES
Check IC301, IC851, Q552 and Q553.
Is the −0.6 V waveform as shown below present at the emitter of Q553 approx. 8 sec. at 2-second intervals after closing the disc tray?
0.6 V
2S
NO
YES
Check the pickup and connections.
Is the waveform as shown below present at IC401 pin ⑬, for approx. 8 sec. after closing the disc tray?
GND
5V
2S
0.2S
NO
IC401 is defective. Or to feed servo section, loading circuit section.
YES
Is the waveform as shown below present at the emitter of Q553 for approx. 8 sec. after closing the disc tray?
GND
1.8V
2S
NO
Q552, Q553 and the peripheral components are defective.
YES
IC802, Q554 and Q555 are defective.

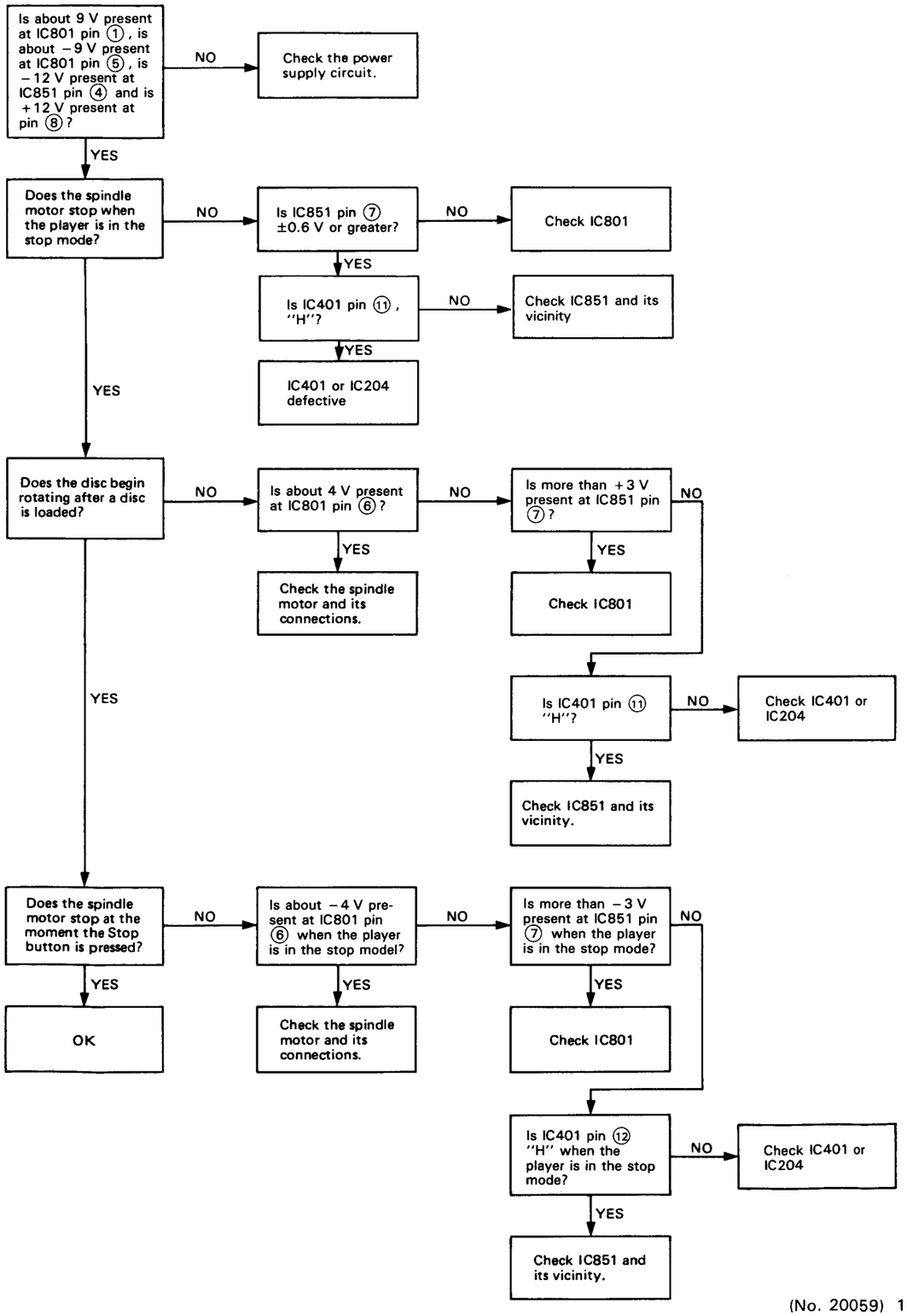
Tracking servo circuit section


Is 12 V present at the positive pin of C107, −12 V present at the negative pin of C108, −9 V present at the collector of Q502? +9 V→Q501 collector
NO
Check the power supply circuit.
YES
Can TOC be read?
YES
NO
Are tracking offset and tracking gain adjustments possible?
NO
Check the pickup, IC501 and the connection of the pickup.
YES
NO
Is TOC read when R528 is shorted?
YES
Check IC503, Q504, and their periphery.
Check IC204, IC401, and Q507.
During the manual search mode, is the pulse present at IC401 pin (22) when the ▶▶ button is pressed, and is the pulse present at IC401 pin (23) when the ◀◀ button is pressed?
NO
Check IC401, IC204 and the vicinity of the keys.
YES
Can Skip operations be performed correctly to each track?
YES
OK
NO
Tracking offset, tracking gain adjustment
Is the pulse waveform observed at IC502 pin (2) and pin (13) when playing the disc after grounding TP4 (TEST) then starting play?
YES
Is the pulse present at IC401 pin (19) when performing Skip operation?
NO
YES
Check the pickup and feed servo circuit.
NO
IC502, Q651, Q652 and Q653 and the peripheral components are defective.

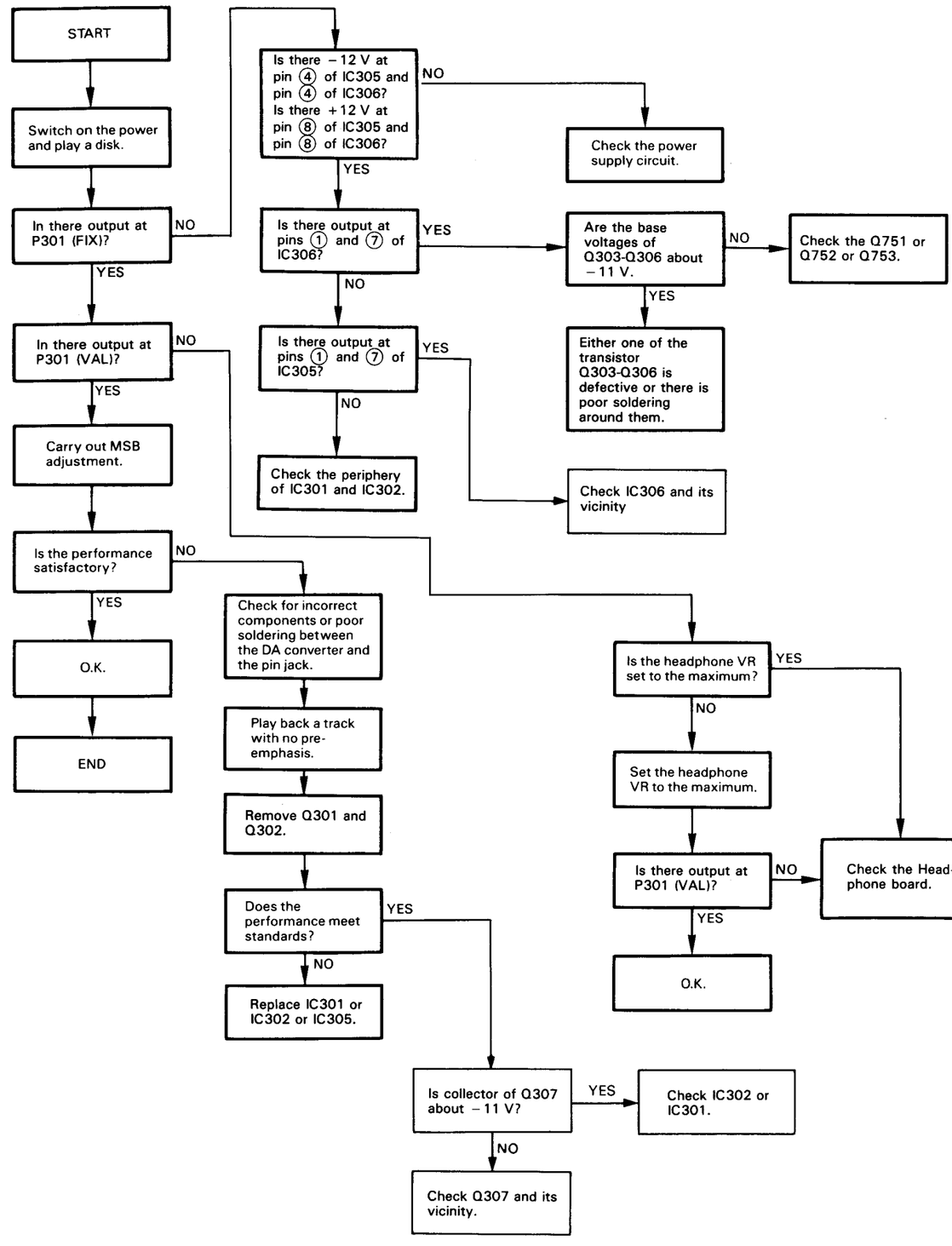
Feed servo circuit section


Is −12 V present at IC802 pin (4), is +12 V present at pin (8), is +9 V present at IC801 pin (1) and is −9 V present at pin (5)?
NO
Check the power supply circuit.
YES
Can TOC be read?
NO
Is the pickup at the inner track of the disc?
YES
NO
Is −4 V present at IC801 pin (7)?
NO
Check rest SW IC204 and their connections.
YES
Check the feed motor and connections.
YES
Is +5 V present at IC401 pin (26)?
NO
Check IC801, IC802 and Q803.
Check IC204, IC401 and the connections.
Can the pickup skipped to each track?
YES
OK
NO
Is the pulse waveform present at IC401 pin (25) when skipping with the ► button, is the pulse waveform present at pin (26) when skipping with the ◄ button, and is IC401 pin (24) 0 V?
NO
Check IC401, IC204 and their connections.
YES
Check the feed servo IC801, IC802, Q803, R809 and their vicinity.

Spindle servo circuit section


Is about 9 V present at IC801 pin ①, is about −9 V present at IC801 pin ⑤, is −12 V present at IC851 pin ④ and is +12 V present at pin ⑧?
NO
Check the power supply circuit.
YES
Does the spindle motor stop when the player is in the stop mode?
NO
Is IC851 pin ⑦ ±0.6 V or greater?
NO
Check IC801
YES
Is IC401 pin ⑪, "H"?
NO
Check IC851 and its vicinity
YES
IC401 or IC204 defective
YES
Does the disc begin rotating after a disc is loaded?
NO
Is about 4 V present at IC801 pin ⑥?
NO
Is more than +3 V present at IC851 pin ⑦?
NO
YES
Check the spindle motor and its connections.
YES
Check IC801
Is IC401 pin ⑪ "H"?
NO
Check IC401 or IC204
YES
Check IC851 and its vicinity.
YES
Does the spindle motor stop at the moment the Stop button is pressed?
NO
Is about −4 V present at IC801 pin ⑥ when the player is in the stop model?
NO
Is more than −3 V present at IC851 pin ⑦ when the player is in the stop mode?
NO
YES
YES
YES
OK
Check the spindle motor and its connections.
Check IC801
Is IC401 pin ⑫ "H" when the player is in the stop mode?
NO
Check IC401 or IC204
YES
Check IC851 and its vicinity.

Audio section (from D/A on)


START
Switch on the power and play a disk.
In there output at P301 (FIX)?
NO
YES
In there output at P301 (VAL)?
NO
YES
Carry out MSB adjustment.
Is the performance satisfactory?
NO
YES
O.K.
END
Is there −12 V at pin ④ of IC305 and pin ④ of IC306? Is there +12 V at pin ⑧ of IC305 and pin ⑧ of IC306?
NO
YES
Check the power supply circuit.
Is there output at pins ① and ⑦ of IC306?
YES
NO
Are the base voltages of Q303-Q306 about −11 V.
NO
YES
Check the Q751 or Q752 or Q753.
Either one of the transistor Q303-Q306 is defective or there is poor soldering around them.
Is there output at pins ① and ⑦ of IC305?
YES
NO
Check the periphery of IC301 and IC302.
Check IC306 and its vicinity
Check for incorrect components or poor soldering between the DA converter and the pin jack.
Play back a track with no pre-emphasis.
Remove Q301 and Q302.
Does the performance meet standards?
YES
NO
Replace IC301 or IC302 or IC305.
Is the headphone VR set to the maximum?
YES
NO
Set the headphone VR to the maximum.
Is there output at P301 (VAL)?
NO
YES
Check the Head-phone board.
O.K.
Is collector of Q307 about −11 V?
YES
NO
Check IC302 or IC301.
Check Q307 and its vicinity.

PARTS LIST

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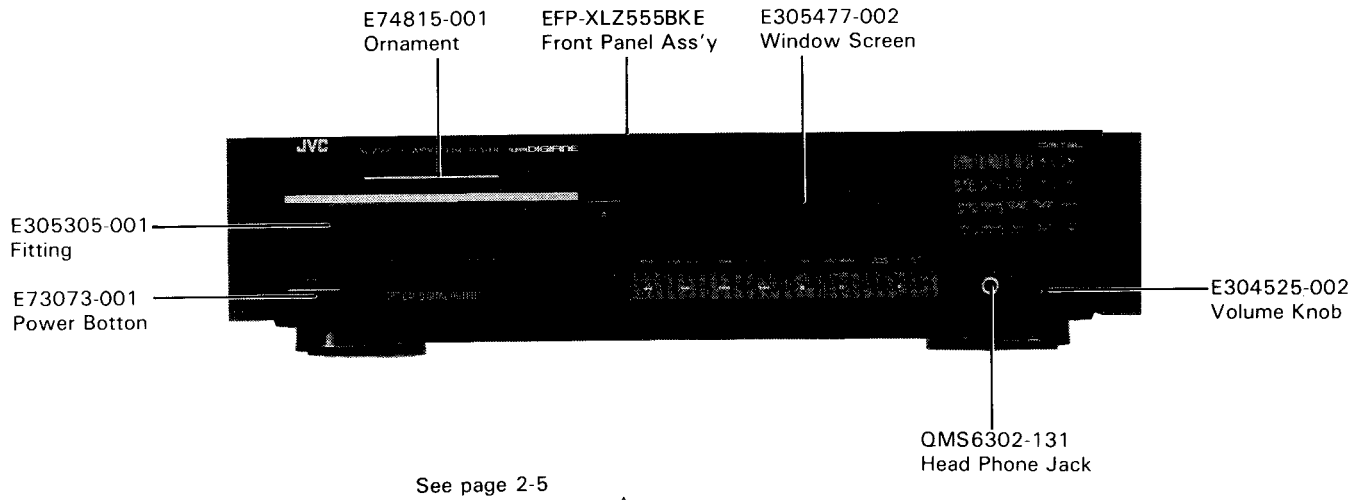
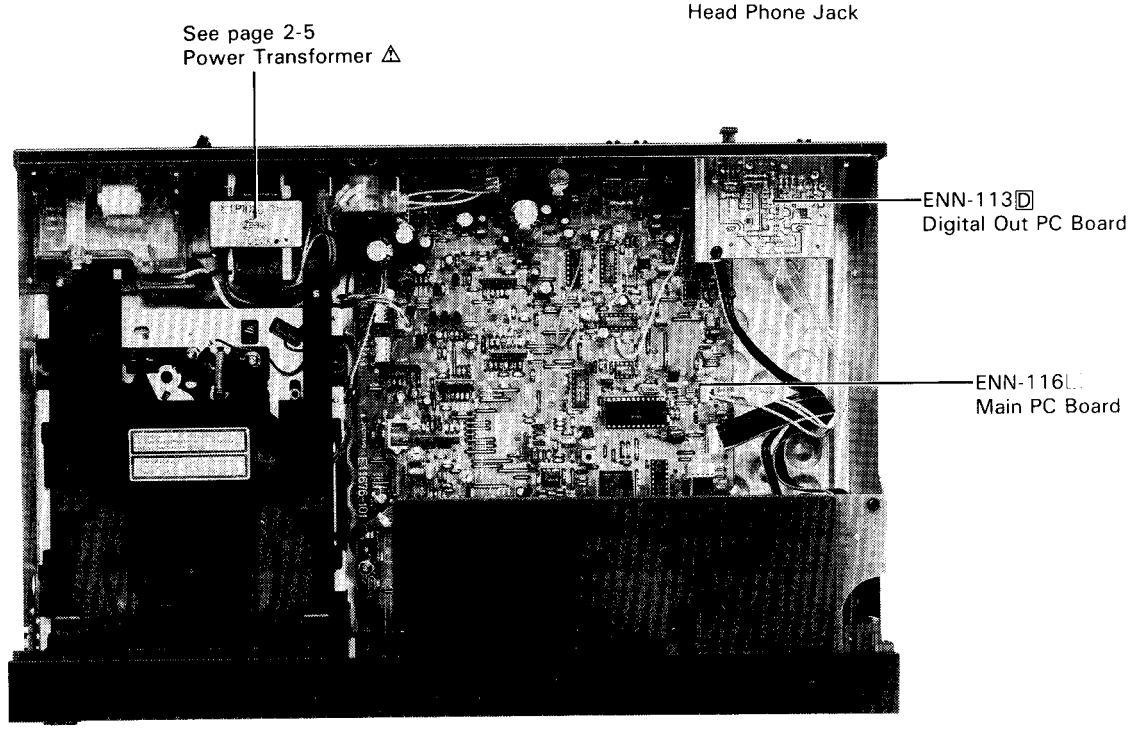
Main Parts Locations

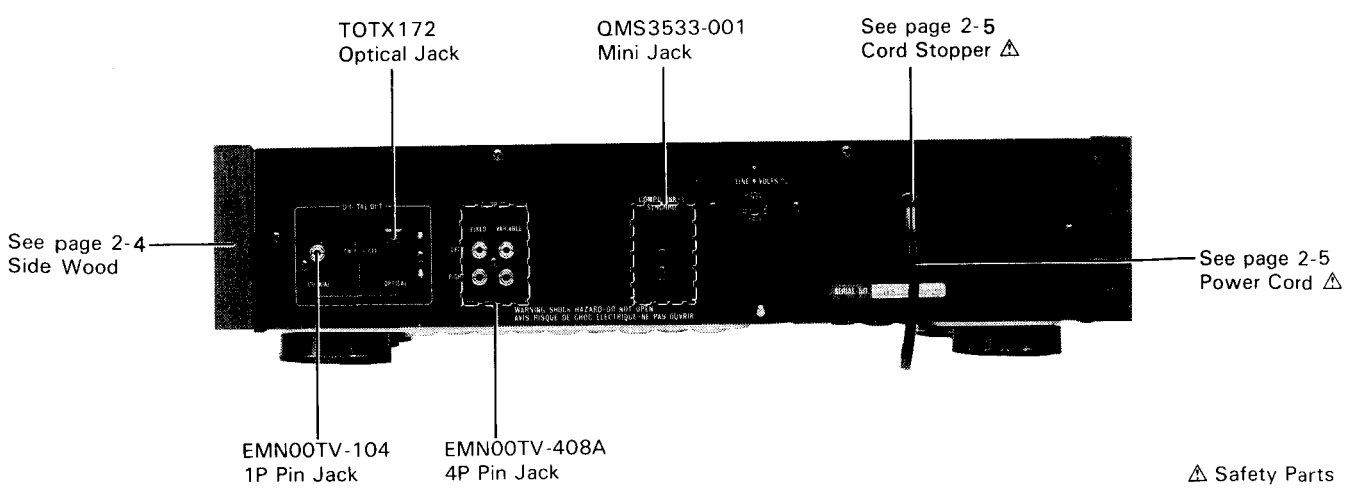
■ Front View



■ Top View

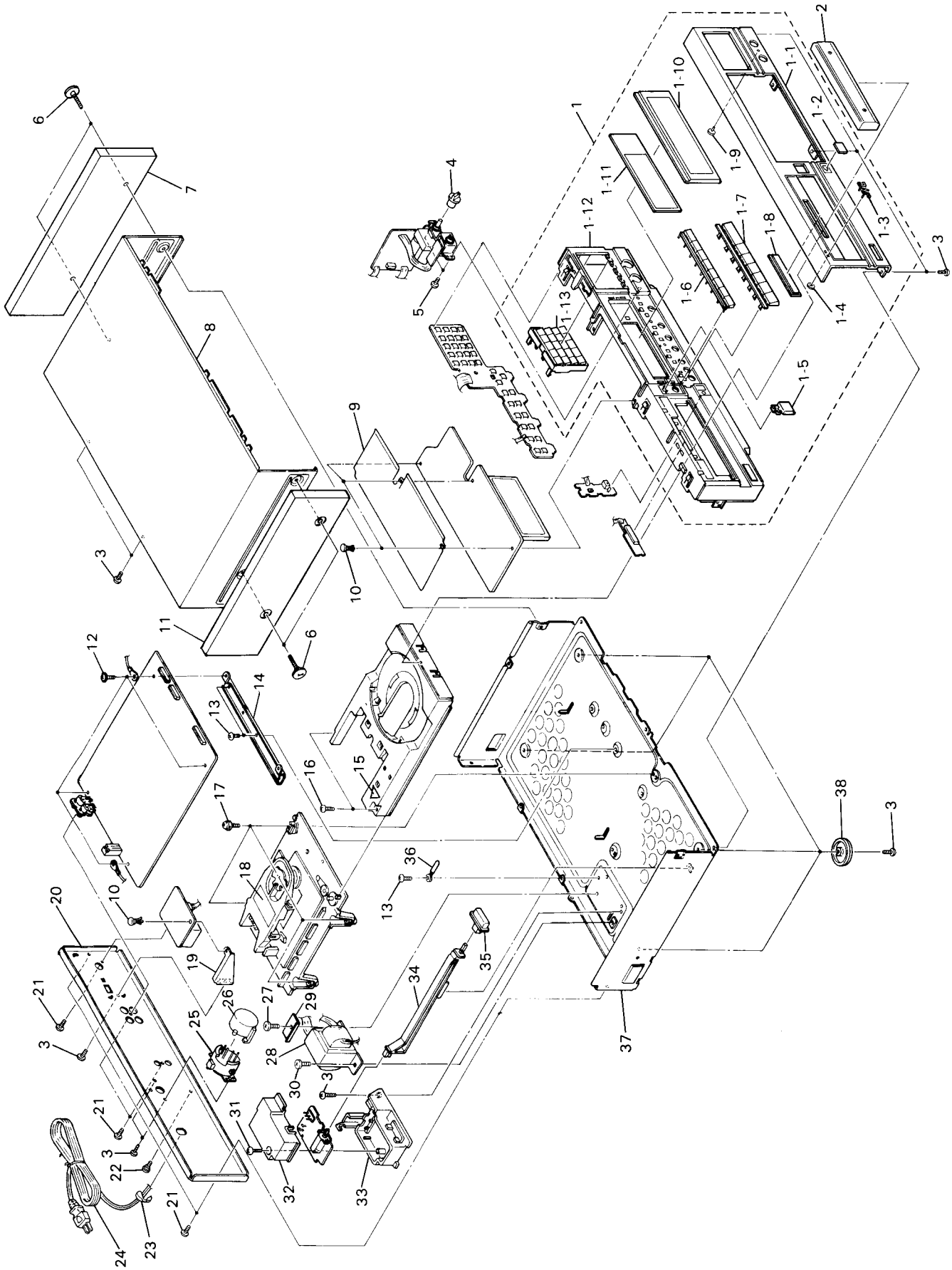


■ Rear View



⚠ Safety Parts

Exploded View and Parts List



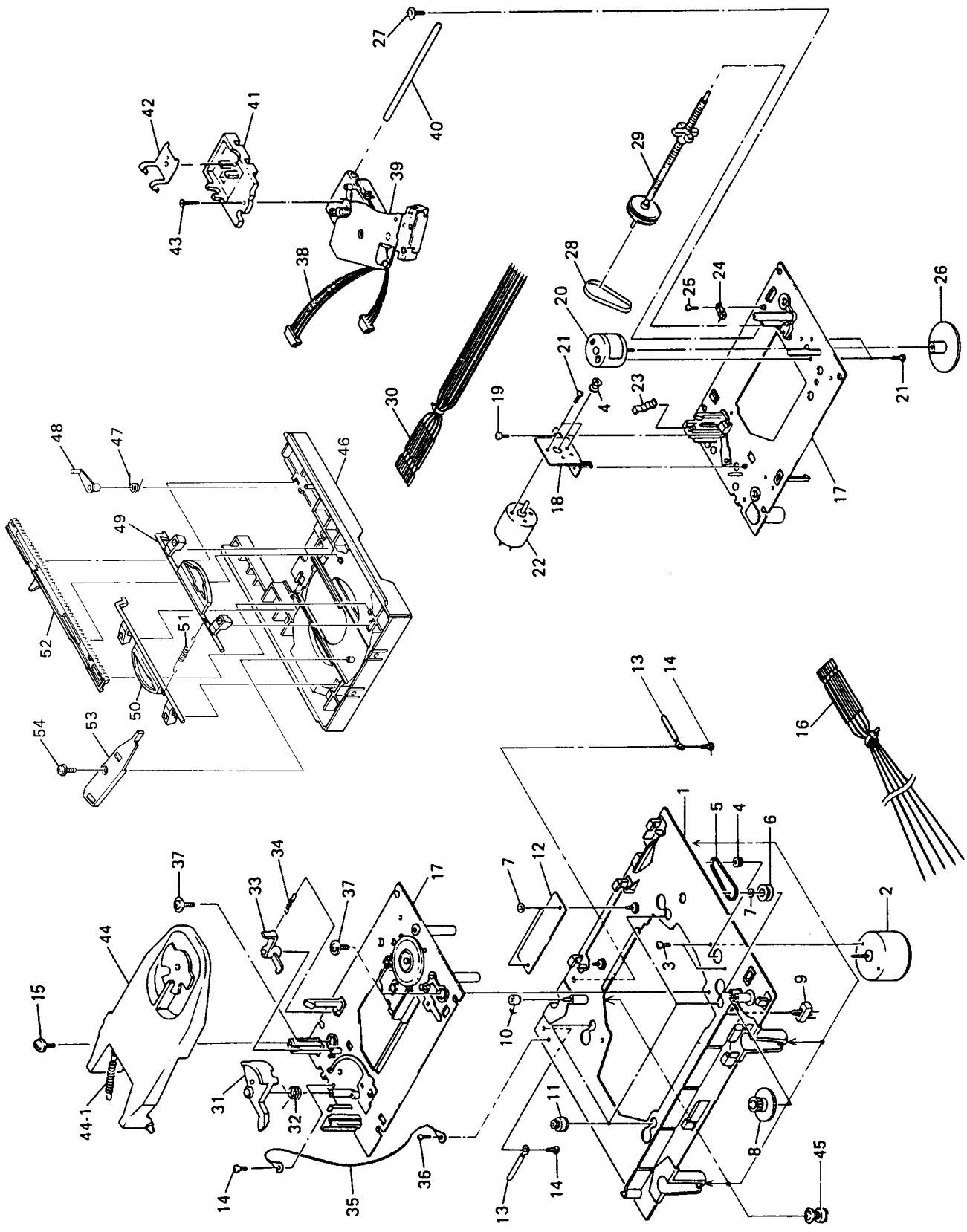
⚠	Item No.	Parts Number	Parts Name	Q'ty	Description	Areas
	01	EFP-XLZ555BKE	FRONT PANEL ASS'Y	1		
	01-01	E26048-002	FRONT PANEL	1		
	01-02	E74631-004	WIDOW SCREEN	1		
	01-03	E72968-001	MARK	1		
	01-04	E60912-003	SPEED NUT	1		
	01-05	E74769-001	BUTTON	1		
	01-06	E305472-001	PUSH BUTTON	1		
	01-07	E305474-001	PUSH BUTTON	1		
	01-08	E74815-001	ORNAMENT	1		
	01-09	E74271-002	INDICATOR	1		
	01-10	E305477-002	WINDOW SCREEN	1		
	01-11	E74635-003	SHEET	1		
	01-12	E11752-001	FRONT BASE	1		
	01-13	E305481-001	BUTTON ASS'Y	1		
	02	E305305-001	FITTING	1	FOR TRAY	
	03	SBSE3008M	SCREW	2	P,PG,U	
		SBSF3008M	SCREW	11		
	04	E304525-002	VOLUME KNOB	1		
	05	SBSF3008M	SCREW	2	FOR BRACKET	
	06	ED44071-001	SCREW	4	FOR SIDE	
	07	ED37925-002	SIDE WOOD	1	(R)	
	08	E25725-004	METAL COVER	1		
	09	E305304-002	SPACER	1		
	10	E48729-001	PLASTIC RIVET	4		
	11	ED37925-001	SIDE WOOD	1	(L)	
	12	GBSE3008CC	SCREW	4		
	13	SDSE3006M	SCREW	3		
	14	E305307-001	BRACKET	1		
	15	E71541-001	HAZARD SYMBOL LABEL	1		E
	16	SBSF3012Z	SCREW	2		
	17	E74727-002	SCREW	4		
	18	E303875-002	CAUTION LABEL	1		
	19	E74581-001	BRACKET	1		
	20	E25969-101	REAR PANEL	1		J
		E25969-103	REAR PANEL	1		P,PG,U
		E25969-104	REAR PANEL	1		A,BS,C,E,G
	—	E25536-017	RATING LABEL	1	JVC	J
	—	E25536-117	RATING LABEL	1	SANIKA	J
	—	E25536-217	RATING LABEL	1	TOKUSHU	J

⚠	Item No.	Parts Number	Parts Name	Q'ty	Description	Areas
	—	E25096-152	RATING LABEL	1		C
	—	E25096-352	RATING LABEL	1		P,PG,U
	—	E25096-552	RATING LABEL	1		E
	—	E24953-073	RATING LABEL	1		A
	—	E25096-552F	RATING LABEL	1		G
	21	E73273-001	SCREW	5		
	22	E73562-003	SCREW	1	FOR REAR PANEL	
⚠	23	QHS3876-162	CORD STOPPER	1		EXCEPT BS
⚠		QHS3876-162BS	CORD STOPPER	1		BS
⚠	24	QMP1200-200	POWER CORD	1		C,J
⚠		QMP7600-200	POWER CORD	1		P,PG,U
⚠		QMP3900-200	POWER CORD	1		E,G
⚠		QMP2560-244	POWER CORD	1		A
⚠		QMP9017-008BS	POWER CORD	1		BS
⚠	25	QSR0085-008U	VOLTAGE SELECTOR	1		P,PG,U
	26	E302764-001	COVER	1		P,PG,U
	27	E65389-004	ASS'Y SCREW	1	FOR TRANSFORMER	
⚠	28	ETP1020-31JA	POWER TRANSFORMER	1		C,J
⚠		ETP1020-31MA	POWER TRANSFORMER	1		P,PG,U
⚠		ETP1020-31EA	POWER TRANSFORMER	1		A,E,G
⚠		ETP1020-31EABS	POWER TRANSFORMER	1		BS
	29	E72606-001	BRACKET	1		
	30	E65389-004	ASS'Y SCREW	1	FOR TRANSFORMER	G
	31	SBSF3010M	SCREW	1		
	32	E25875-001	COVER	1		A,BS,E,G,P,PG,U
		E25875-002	COVER	1		C,J
	33	E25874-003	CASE	1		A,BS,E,G,P,PG,U
		E25874-004	CASE	1		C,J
	34	E305081-101	PUSH SHAFT	1		
	35	E73073-001	POWER BUTTON	1		
	36	E72018-001	WIRE CLAMP	1		
	37	E11695-003	CHASSIS BASE	1		EXCEPT G
		E11695-004	CHASSIS BASE	1		G
	38	E74522-001	FOOT ASS'Y	4		

The Marks for Designated Areas

J·····the U.S.A.
C·····Canada
E·····Europe
A·····Australia
G·····West Germany
ES·····Spain
BS·····the U.K.
P,PG·····U.S.Military Market
U·····Other Countries
No mark indicates all areas.

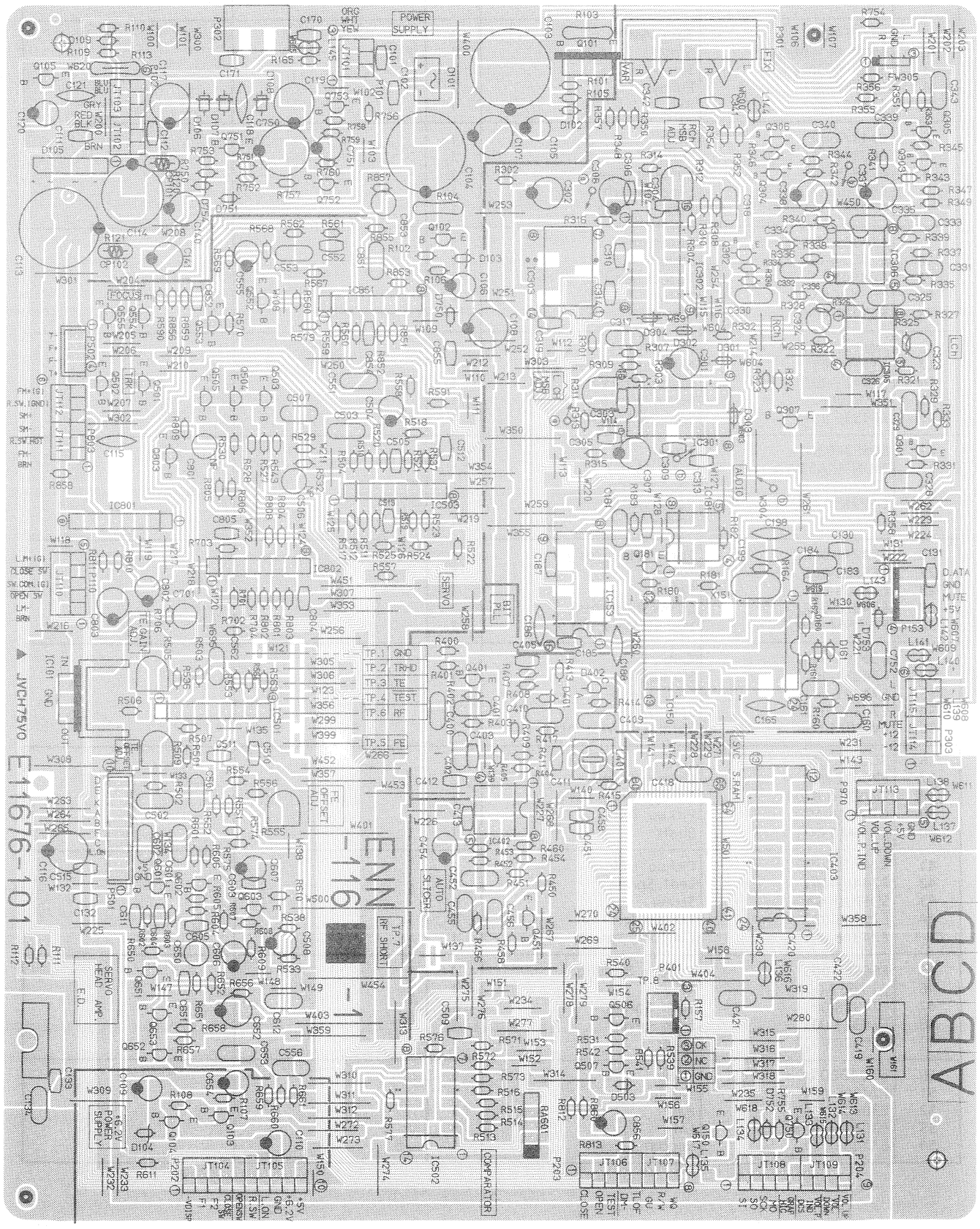
Mechanism Ass'y and Tray Ass'y



Item	Part Number	Part Name	Q'ty	Description	Areas
1	E11554-001	Base Ass'Y	1		
2	MMN-6F1LB8Q	Motor	1		
3	SDSP2603N	Screw	2		
4	E73060-001	Pulley	2		
5	E74347-001	Belt	1		
6	E74323-001	Gear	1		
7	E60912-001	Speed Nut	1		
8	E74325-001	Loading Gear	1		
9	ESS2100-003	Slide Switch	1		
10	E70267-003	Rubber Tube	1		
11	E74349-001	Insulator	4		
12	E74326-002	Sheet	1		
13	PU49485-1	Wire Clamp	2		
14	SBSE3005Z	Screw	2		
15	E65923-004	Screw	1		
16	EWR55A-001	Flat Wire	1		
17	E11580-001	Mechanism Base Ass'Y	1		
18	E74421-001	Motor Bracket	1		
19	SBSE3006Z	Screw	1		
20	E74539-001	Spindle Motor	1		
21	SDSP2003N	Screw	4		
22	MDN-4RA3EWA	Feed Motor	1		
23	E72764-001	Leaf Spring	1		
24	QSP2K11-E02	Push Switch	1		
25	SPSF2010Z	Screw	1		
26	E74711-002	Turn Table Ass'y	1		
27	E65923-005	Screw	1		
28	E74305-001	Belt	1		
29	E74370-002	Screw Shaft Ass'y	1		
30	EWR56A-002	Socket Wire Ass'y	1		
31	E305034-001	Cam	1		
32	E74351-001	Spring	1		
33	E74491-001	Lock Lever	1		
34	E74348-002	Spring	1		
35	EWT021-030	Terminal Wire Ass'y	1		
36	SDSE3005Z	Screw	1		
37	E74422-001	Special Screw	2		
38	EWS25A-B104	Socket Wire Ass'y	1		
39	OPTIMA-4S	Pickup Ass'y	1		
40	E74930-001	Shaft	1		
41	E304992-002	Pickup Holder	1		
42	E74493-001	Leaf Spring	1		
43	SDSP2006Z	Screw	1		
44	E25796-003	CD Holder Unit	1		
44-1	E74348-001	Clamper Spring	1		
45	E66509-005	Rubber Bushing	4		
46	E11557-003	Tray	1		
47	E74328-001	Lock Spring	1		
48	E74327-003	Lock Lever	1		
49	E304989-002	Lifter	1		
50	E304990-003	Lifter	1		
51	E74905-001	Spring	1		
52	E304987-005	Rack	1		
53	E304988-001	Link	1		
54	E72405-001	Special Screw	1		

Printed Circuit Board Ass'y and Parts List

■ ENN-116□ Main PC Board Ass'y



Note (1)

PC Board Ass'y	Designated Areas
ENN-116 [B]	the U.S.A.,Canada, the U.K., Australia, U.S.Military Market, Europe,Other Countries
ENN-116 [D]	West Germany

TRANSISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION	MAKER	AREA
	Q101	2SD313V(D,E)	SILICON	SANYO	
	Q102	2SB544MP(E,F)	SILICON	SANYO	
	Q103	2SB544MP(E,F)	SILICON	SANYO	
	Q104	2SC1740(R,S)	SILICON	ROHM	
	Q105	2SA733A(P,Q)	SILICON	NEC	
	Q150	DTC114YS	SILICON	ROHM	
	Q181	2SC458(C,D)	SILICON	HITACHI	
	Q301	2SC3068	SILICON	SANYO	
	Q302	2SC3068	SILICON	SANYO	
	Q303	2SC3068	SILICON	SANYO	
	Q304	2SC3068	SILICON	SANYO	
	Q305	2SC3068	SILICON	SANYO	
	Q306	2SC3068	SILICON	SANYO	
	Q307	DTA114YS	SILICON	ROHM	
	Q401	2SD1302(S,T)	SILICON	MATSUSHITA	
	Q451	2SD1302(S,T)	SILICON	MATSUSHITA	
	Q501	2SD400MP(E,F)	SILICON	SANYO	
	Q502	2SB544MP(E,F)	SILICON	SANYO	
	Q503	2SD1302(S,T)	SILICON	MATSUSHITA	
	Q504	2SD1302(S,T)	SILICON	MATSUSHITA	
	Q505	2SD1302(S,T)	SILICON	MATSUSHITA	
	Q506	2SA933(R,S)	SILICON	ROHM	
	Q507	2SC1740(R,S)	SILICON	ROHM	
	Q552	2SD1302(S,T)	SILICON	MATSUSHITA	
	Q553	2SA933(R,S)	SILICON	ROHM	
	Q554	2SD400MP(E,F)	SILICON	SANYO	
	Q555	2SB544MP(E,F)	SILICON	SANYO	
	Q601	2SC535(B,C)	SILICON	HITACHI	
	Q602	2SC458(C,D)	SILICON	HITACHI	
	Q603	2SA1029(C,D)	SILICON	HITACHI	
	Q651	2SA1029(C,D)	SILICON	HITACHI	
	Q652	2SC458(C,D)	SILICON	HITACHI	
	Q653	2SC458(C,D)	SILICON	HITACHI	
	Q750	DTA114YS	SILICON	ROHM	
	Q751	2SC458(C,D)	SILICON	HITACHI	
	Q752	2SC458(C,D)	SILICON	HITACHI	
	Q753	2SA1029(C,D)	SILICON	HITACHI	
	Q803	2SD1302(S,T)	SILICON	MATSUSHITA	

I. C. S

⚠	ITEM	PART NUMBER	DESCRIPTION	MAKER	AREA
	IC101	NJM78M05A	I.C.	JRC	
	IC150	YM3613B	I.C.	YAMAHA	
	IC153	SM5807EP	I.C.	NPC	
	IC181	6N137	I.C.	MITSUBISHI	
	IC301	PCM56P	I.C.	JAPAN B.B.	
	IC302	PCM56P	I.C.	JAPAN B.B.	
	IC303	TC74HC02P	I.C.	TOSHIBA	
	IC305	NJM5532D	I.C.	JRC	
	IC306	M5218P	I.C.	MITSUBISHI	
	IC401	YM3815	I.C.	YAMAHA	
	IC402	M5209P	I.C.	MITSUBISHI	
	IC403	LC3517BS-15	I.C.	SANYO	
	IC501	NJM072S	I.C.	JRC	
	IC502	NJM2901N	I.C.	JRC	
	IC503	M5218L	I.C.	MITSUBISHI	
	IC801	STA341M(A)	I.C.	SANKEN	
	IC802	M5218L	I.C.	MITSUBISHI	
	IC851	M5218L	I.C.	MITSUBISHI	

DIODES

⚠	ITEM	PART NUMBER	DESCRIPTION	MAKER	AREA
	D101	S1WB(A)	SILICON	SHINDENGEN	
	D102	MTZ13JC	ZENER	ROHM	
	D103	MTZ13JC	ZENER	ROHM	
	D104	MTZ6.8JC	ZENER	ROHM	
	D105	S1VB20F	SILICON	SHINDENGEN	
	D106	ERA15-02L19	SILICON	KYODO DENKI	
	D107	ERA15-02L19	SILICON	KYODO DENKI	
	D108	ERA15-02L19	SILICON	KYODO DENKI	
	D109	MTZ33JC	ZENER	ROHM	
	D160	1SS133	SILICON	ROHM	
	D161	1SS133	SILICON	ROHM	
	D401	MTZ5.1JB	ZENER	ROHM	
	D402	SVC321-AW	VARICAP	SANYO	
	D503	1SS133	SILICON	ROHM	
	D750	1SS133	SILICON	ROHM	
	D751	1SS133	SILICON	ROHM	
	D752	1SS133	SILICON	ROHM	
	D753	1SS133	SILICON	ROHM	
	D754	MTZ5.1JB	ZENER	ROHM	

CAPACITORS

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	C101	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C102	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C103	QETB1EM-338	3300MF	25V	ELECTRO	
	C104	QETB1EM-338	3300MF	25V	ELECTRO	
	C105	QETB1CM-476	47MF	16V	ELECTRO	
	C106	QETB1CM-476	47MF	16V	ELECTRO	
	C107	QETB1CM-227	220MF	16V	ELECTRO	
	C108	QETB1CM-227	220MF	16V	ELECTRO	
	C109	QETB1AM-476	47MF	10V	ELECTRO	
	C110	QETB1AM-107	100MF	10V	ELECTRO	
	C111	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C112	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C113	QETB1CM-338	3300MF	16V	ELECTRO	
	C114	QETB1CM-228	2200MF	16V	ELECTRO	
	C115	QCF21HP-223	0.022MF	50V	CERAMIC	
	C116	QETB0JM-477	470MF	6.3V	ELECTRO	
	C117	QETB1VM-107	100MF	35V	ELECTRO	
	C118	QCF21HP-223	0.022MF	50V	CERAMIC	
	C119	QETB1HM-107	100MF	50V	ELECTRO	
	C120	QETB1HM-475	4.7MF	50V	ELECTRO	
	C121	QCF21HP-223	0.022MF	50V	CERAMIC	
	C130	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C132	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C133	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C134	QCZ0205-155	1.5MF	25V	CERAMIC	
	C140	QETB1CM-227	220MF	16V	ELECTRO	
	C141	QETB1CM-227	220MF	16V	ELECTRO	
	C160	QFN81HJ-472	4700PF	50V	MYLAR	
	C161	QFV81HJ-105	1MF	50V	T.FILM	
	C165	QCS21HJ-820	82PF	50V	CERAMIC	
	C170	QCBB1HK-101	100PF	50V	CERAMIC	
	C171	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C181	QFV81HJ-104	0.1MF	50V	T.FILM	
	C183	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C184	QFV81HJ-104	0.1MF	50V	T.FILM	
	C185	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C186	QCS21HJ-101	100PF	50V	CERAMIC	
	C187	QCS21HJ-820	82PF	50V	CERAMIC	
	C188	QCS21HJ-5R0	5PF	50V	CERAMIC	
	C198	QCS21HJ-8R0	8PF	50V	CERAMIC	
	C199	QCS21HJ-8R0	8PF	50V	CERAMIC	
	C301	QETB1CM-107	100MF	16V	ELECTRO	
	C302	QETB1CM-107	100MF	16V	ELECTRO	
	C303	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C304	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C305	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C306	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C307	QETB1CM-107	100MF	16V	ELECTRO	
	C308	QETB1CM-107	100MF	16V	ELECTRO	
	C309	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C310	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C313	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C314	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C317	QFN81HJ-103	0.01MF	50V	MYLAR	
	C318	QFN81HJ-103	0.01MF	50V	MYLAR	
	C319	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C323	QFS31HJ-821	820PF	50V	POLYSTYROL	
	C324	QFS31HJ-821	820PF	50V	POLYSTYROL	
	C325	QFV81HJ-223	0.022MF	50V	T.FILM	
	C326	QFV81HJ-223	0.022MF	50V	T.FILM	

⚠ Safety Parts

CAPACITORS

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	C328	QFN81HJ-103	0.01MF	50V	MYLAR	
	C329	QFN81HJ-683	0.068MF	50V	MYLAR	
	C330	QFN81HJ-683	0.068MF	50V	MYLAR	
	C331	QFP81HG-202	2000PF	50V	POLY	
	C332	QFP81HG-202	2000PF	50V	POLY	
	C333	QFN81HJ-103	0.01MF	50V	MYLAR	
	C334	QFN81HJ-103	0.01MF	50V	MYLAR	
	C335	QFV81HJ-223	0.022MF	50V	T.FILM	
	C336	QFV81HJ-223	0.022MF	50V	T.FILM	
	C337	QETB1EM-107	100MF	25V	ELECTRO	
	C338	QETB1EM-107	100MF	25V	ELECTRO	
	C339	QFP81HJ-822	8200PF	50V	POLY	
	C340	QFP81HJ-822	8200PF	50V	POLY	
	C341	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C342	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C343	QFN81HJ-103	0.01MF	50V	MYLAR	
	C400	QFV81HJ-104	0.1MF	50V	T.FILM	
	C401	QFN81HJ-103	0.01MF	50V	MYLAR	
	C402	QFV81HJ-474	0.47MF	50V	T.FILM	
	C403	QCGB1HK-102	1000PF	50V	CERAMIC	
	C405	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C409	QFP81HJ-151	150PF	50V	POLY	
	C410	QFP81HJ-471	470PF	50V	POLY	
	C411	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C412	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C413	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C418	QCZ0205-155	1.5MF	25V	CERAMIC	
	C419	QCZ0205-155	1.5MF	25V	CERAMIC	
	C420	QCZ0205-155	1.5MF	25V	CERAMIC	
	C421	QCZ0205-155	1.5MF	25V	CERAMIC	
	C422	QCZ0205-155	1.5MF	25V	CERAMIC	
	C451	QCSB1HJ-470	47PF	50V	CERAMIC	
	C452	QFN81HJ-103	0.01MF	50V	MYLAR	
	C454	QETB1EM-106	10MF	25V	ELECTRO	
	C455	QFN81HJ-473	0.047MF	50V	MYLAR	
	C456	QFV81HJ-474	0.47MF	50V	T.FILM	
	C458	QCSB1HJ-180	18PF	50V	CERAMIC	
	C501	QFP81HJ-151	150PF	50V	POLY	
	C502	QFP81HJ-121	120PF	50V	POLY	
	C503	QFN81HJ-273	0.027MF	50V	MYLAR	
	C505	QCSB1HJ-150	15PF	50V	CERAMIC	
	C506	QEN51HM-225	2.2MF	50V	NON POLE	
	C507	QFN81HJ-393	0.039MF	50V	MYLAR	
	C508	QETB1CM-226	22MF	16V	ELECTRO	
	C509	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C510	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C511	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C512	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C513	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C515	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C551	QFN81HJ-183	0.018MF	50V	MYLAR	
	C552	QCBB1HK-391	390PF	50V	CERAMIC	
	C553	QFN81HJ-563	0.056MF	50V	MYLAR	
	C555	QETB1CM-226	22MF	16V	ELECTRO	
	C556	QFV81HJ-104	0.1MF	50V	T.FILM	
	C562	QFV81HJ-224	0.22MF	50V	T.FILM	
	C601	QFN81HJ-472	4700PF	50V	MYLAR	
	C602	QFN81HJ-472	4700PF	50V	MYLAR	
	C603	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C604	QCT30CH-3R9	3.9PF	50V	CERAMIC	
	C605	QCBB1HK-471	470PF	50V	CERAMIC	
	C606	QETB1EM-106	10MF	25V	ELECTRO	
	C607	QETB1CM-476	47MF	16V	ELECTRO	
	C611	QCBB1HK-101	100PF	50V	CERAMIC	
	C612	QFV81HJ-154	0.15MF	50V	T.FILM	
	C650	QEN51HM-105	1MF	50V	NON POLE	
	C651	QCBB1HK-101	100PF	50V	CERAMIC	
	C652	QETB1CM-107	100MF	16V	ELECTRO	
	C653	QFN81HJ-473	0.047MF	50V	MYLAR	
	C654	QETB1EM-106	10MF	25V	ELECTRO	
	C701	QEN51HM-225	2.2MF	50V	NON POLE	
	C750	QETB1CM-477	470MF	16V	ELECTRO	
	C751	QETB1EM-106	10MF	25V	ELECTRO	
	C752	QFN81HJ-103	0.01MF	50V	MYLAR	
	C801	QEN51HM-225	2.2MF	50V	NON POLE	
	C802	QETB1EM-226	22MF	25V	ELECTRO	
	C803	QETB0JM-227	220MF	6.3V	ELECTRO	
	C804	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C805	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C851	QFN81HJ-332	3300PF	50V	MYLAR	
	C852	QCBB1HK-101	100PF	50V	CERAMIC	
	C853	QEN51HM-105	1MF	50V	NON POLE	
	C854	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C855	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C856	QETB1HM-474	0.47MF	50V	ELECTRO	

RESISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R101	QRD167J-471	470	1/6W	CARBON	
	R102	QRD167J-471	470	1/6W	CARBON	
⚠	R103	QRZ0077-100	10	1/4W	FUSIBLE	
⚠	R104	QRZ0077-100	10	1/4W	FUSIBLE	
	R105	QRD167J-101	100	1/6W	CARBON	
	R106	QRD167J-101	100	1/6W	CARBON	
	R107	QRD167J-821	820	1/6W	CARBON	
	R108	QRD167J-271	270	1/6W	CARBON	
	R109	QRD167J-122	1.2K	1/6W	CARBON	
	R110	QRD167J-121	120	1/6W	CARBON	
	R111	QRD167J-152	1.5K	1/6W	CARBON	
	R112	QRD167J-152	1.5K	1/6W	CARBON	
⚠	R113	QRZ0077-560	56	1/4W	FUSIBLE	
	R120	PTH61G30BD2R2N	2.2		POSISTOR	
	R121	PTH61G30BD2R2N	2.2		POSISTOR	
	R157	QRD167J-102	1K	1/6W	CARBON	
	R160	QRD167J-181	180	1/6W	CARBON	
	R161	QRD167J-152	1.5K	1/6W	CARBON	
	R162	QRD167J-302	3K	1/6W	CARBON	
	R164	QRD167J-105	1M	1/6W	CARBON	
	R165	QRD167J-471	470	1/6W	CARBON	
	R180	QRD167J-181	180	1/6W	CARBON	
	R181	QRD167J-181	180	1/6W	CARBON	
	R182	QRD167J-331	330	1/6W	CARBON	
	R183	QRD167J-391	390	1/6W	CARBON	
	R301	QRD167J-561	560	1/6W	CARBON	
	R302	QRD167J-561	560	1/6W	CARBON	
	R303	QRD167J-564	560K	1/6W	CARBON	
	R304	QRD167J-564	560K	1/6W	CARBON	
	R307	QRD167J-105	1M	1/6W	CARBON	
	R308	QRD167J-105	1M	1/6W	CARBON	
	R309	QRD167J-474	470K	1/6W	CARBON	
	R310	QRD167J-474	470K	1/6W	CARBON	
	R311	QVZ3518-104	100K	0.1W	VARIABLE	
	R312	QVZ3518-104	100K	0.1W	VARIABLE	
	R313	QRD167J-224	220K	1/6W	CARBON	
	R314	QRD167J-224	220K	1/6W	CARBON	
⚠	R315	QRV144F-2700	270	1/4W	M.FILM	
⚠	R316	QRV144F-2700	270	1/4W	M.FILM	
	R321	QRD167J-271	270	1/6W	CARBON	
	R322	QRD167J-271	270	1/6W	CARBON	
	R323	QRD167J-105	1M	1/6W	CARBON	
	R324	QRD167J-104	100K	1/6W	CARBON	
	R325	QRD167J-155	1.5M	1/6W	CARBON	
	R326	QRD167J-155	1.5M	1/6W	CARBON	
	R327	QRD167J-471	470	1/6W	CARBON	
	R328	QRD167J-471	470	1/6W	CARBON	
	R329	QRD167J-221	220	1/6W	CARBON	
	R330	QRD167J-221	220	1/6W	CARBON	
	R331	QRD167J-182	1.8K	1/6W	CARBON	
	R332	QRD167J-182	1.8K	1/6W	CARBON	
	R333	QRD167J-105	1M	1/6W	CARBON	
	R334	QRD167J-105	1M	1/6W	CARBON	
	R335	QRD167J-911	910	1/6W	CARBON	
	R336	QRD167J-911	910	1/6W	CARBON	
	R337	QRD167J-821	820	1/6W	CARBON	
	R338	QRD167J-821	820	1/6W	CARBON	
	R339	QRD167J-101	100	1/6W	CARBON	
	R340	QRD167J-101	100	1/6W	CARBON	
	R341	QRD167J-273	27K	1/6W	CARBON	
	R342	QRD167J-273	27K	1/6W	CARBON	
	R343	QRD167J-151	150	1/6W	CARBON	
	R344	QRD167J-151	150	1/6W	CARBON	
	R345	QRD167J-151	150	1/6W	CARBON	
	R346	QRD167J-151	150	1/6W	CARBON	
	R347	QRD167J-103	10K	1/6W	CARBON	
	R348	QRD167J-103	10K	1/6W	CARBON	
	R349	QRD167J-103	10K	1/6W	CARBON	
	R350	QRD167J-103	10K	1/6W	CARBON	
	R351	QRD167J-151	150	1/6W	CARBON	
	R352	QRD167J-151	150	1/6W	CARBON	
	R353	QRD167J-561	560	1/6W	CARBON	
	R354	QRD167J-561	560	1/6W	CARBON	
	R355	QRD167J-181	180	1/6W	CARBON	
	R356	QRD167J-181	180	1/6W	CARBON	
	R357	QRD167J-105	1M	1/6W	CARBON	
	R358	QRD167J-104	100K	1/6W	CARBON	
	R400	QRD167J-682	6.8K	1/6W	CARBON	
	R401	QRD167J-682	6.8K	1/6W	CARBON	
	R402	QRD167J-181	180	1/6W	CARBON	
	R403	QRD167J-331	330	1/6W	CARBON	
	R404	QRD167J-272	2.7K	1/6W	CARBON	
	R405	QRD167J-471	470	1/6W	CARBON	
⚠	R407	QRV144F-1803	180K	1/4W	M.FILM	
⚠	R408	QRV144F-1803	180K	1/4W	M.FILM	
	R409	QRD167J-183	18K	1/6W	CARBON	
	R411	QRD167J-183	18K	1/6W	CARBON	
	R413	QRD167J-152	1.5K	1/6W	CARBON	
	R414	QRD167J-104	100K	1/6W	CARBON	
	R415	QRD167J-821	820	1/6W	CARBON	

⚠ Safety Parts

RESISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R417	QRD167J-471	470	1/6W	CARBON	
	R450	QRD167J-471	470	1/6W	CARBON	
	R451	QRD167J-472	4.7K	1/6W	CARBON	
	R452	QRD167J-154	150K	1/6W	CARBON	
	R453	QRD167J-562	5.6K	1/6W	CARBON	
	R454	QRD167J-103	10K	1/6W	CARBON	
	R456	QRD167J-104	100K	1/6W	CARBON	
	R458	QRD167J-183	18K	1/6W	CARBON	
	R460	QRD167J-562	5.6K	1/6W	CARBON	
	R501	QRD167J-563	56K	1/6W	CARBON	
	R502	QRD167J-563	56K	1/6W	CARBON	
⚠	R503	QRV144F-4703	470K	1/4W	M.FILM	
	R504	QRD167J-122	1.2K	1/6W	CARBON	
	R505	QVZ3518-222	2.2K	0.1W	VARIABLE	
	R506	QRD167J-821	820	1/6W	CARBON	
⚠	R507	QRV144F-3903	390K	1/4W	M.FILM	
	R509	QVZ3518-224	220K	0.1W	VARIABLE	
	R510	QRD167J-223	22K	1/6W	CARBON	
	R511	QRD167J-103	10K	1/6W	CARBON	
	R512	QRD167J-103	10K	1/6W	CARBON	
	R513	QRD167J-562	5.6K	1/6W	CARBON	
	R514	QRD167J-562	5.6K	1/6W	CARBON	
	R515	QRD167J-562	5.6K	1/6W	CARBON	
	R516	QRD167J-562	5.6K	1/6W	CARBON	
	R517	QRD167J-183	18K	1/6W	CARBON	
	R519	QRD167J-103	10K	1/6W	CARBON	
	R520	QRD167J-104	100K	1/6W	CARBON	
	R522	QRD167J-303	30K	1/6W	CARBON	
	R523	QRD167J-304	300K	1/6W	CARBON	
	R524	QRD167J-304	300K	1/6W	CARBON	
	R525	QRD167J-103	10K	1/6W	CARBON	
	R527	QRD167J-104	100K	1/6W	CARBON	
	R528	QRD167J-104	100K	1/6W	CARBON	
	R529	QRD167J-102	1K	1/6W	CARBON	
	R530	QRD167J-183	18K	1/6W	CARBON	
	R531	QRD167J-104	100K	1/6W	CARBON	
	R532	QRD167J-152	1.5K	1/6W	CARBON	
	R533	QRD167J-562	5.6K	1/6W	CARBON	
	R536	QRD167J-473	47K	1/6W	CARBON	
	R537	QRD167J-470	47	1/6W	CARBON	
	R538	QRD167J-562	5.6K	1/6W	CARBON	
	R539	QRD167J-183	18K	1/6W	CARBON	
	R540	QRD167J-183	18K	1/6W	CARBON	
	R541	QRD167J-183	18K	1/6W	CARBON	
	R542	QRD167J-183	18K	1/6W	CARBON	
	R543	QRD167J-103	10K	1/6W	CARBON	
	R551	QRD167J-104	100K	1/6W	CARBON	
	R552	QRD167J-104	100K	1/6W	CARBON	
	R553	QRD167J-394	390K	1/6W	CARBON	
	R554	QRD167J-334	330K	1/6W	CARBON	
	R555	QVZ3518-104	100K	0.1W	VARIABLE	
	R556	QRD167J-103	10K	1/6W	CARBON	
	R557	QRD167J-681	680	1/6W	CARBON	
	R558	QRD167J-473	47K	1/6W	CARBON	
	R559	QRD167J-331	330	1/6W	CARBON	
	R560	QRD167J-333	33K	1/6W	CARBON	
	R561	QRD167J-223	22K	1/6W	CARBON	
	R562	QRD167J-274	270K	1/6W	CARBON	
	R563	QRD167J-222	2.2K	1/6W	CARBON	
	R564	QRD167J-121	120	1/6W	CARBON	
	R567	QRD167J-105	1M	1/6W	CARBON	
	R568	QRD167J-470	47	1/6W	CARBON	
	R569	QRD167J-473	47K	1/6W	CARBON	
	R570	QRD167J-272	2.7K	1/6W	CARBON	
	R571	QRD167J-682	6.8K	1/6W	CARBON	
	R572	QRD167J-104	100K	1/6W	CARBON	
	R573	QRD167J-562	5.6K	1/6W	CARBON	
	R574	QRD167J-105	1M	1/6W	CARBON	
	R575	QRD167J-105	1M	1/6W	CARBON	
	R576	QRD167J-104	100K	1/6W	CARBON	
	R577	QRD167J-562	5.6K	1/6W	CARBON	
	R579	QRD167J-104	100K	1/6W	CARBON	
	R580	QRD167J-103	10K	1/6W	CARBON	
	R590	QRD167J-470	47	1/6W	CARBON	
	R591	QRD167J-155	1.5M	1/6W	CARBON	
	R601	QRD167J-183	18K	1/6W	CARBON	
	R602	QRD167J-432	4.3K	1/6W	CARBON	
	R603	QRD167J-391	390	1/6W	CARBON	
	R604	QRD167J-221	220	1/6W	CARBON	
	R605	QRD167J-152	1.5K	1/6W	CARBON	
	R606	QRD167J-561	560	1/6W	CARBON	
	R607	QRD167J-561	560	1/6W	CARBON	
	R608	QRD167J-562	5.6K	1/6W	CARBON	
	R609	QRD167J-152	1.5K	1/6W	CARBON	
	R610	QRD167J-271	270	1/6W	CARBON	
	R611	QRD167J-222	2.2K	1/6W	CARBON	
	R650	QRD167J-102	1K	1/6W	CARBON	
	R651	QRD167J-103	10K	1/6W	CARBON	
	R652	QRD167J-272	2.7K	1/6W	CARBON	
	R656	QRD167J-271	270	1/6W	CARBON	

RESISTORS

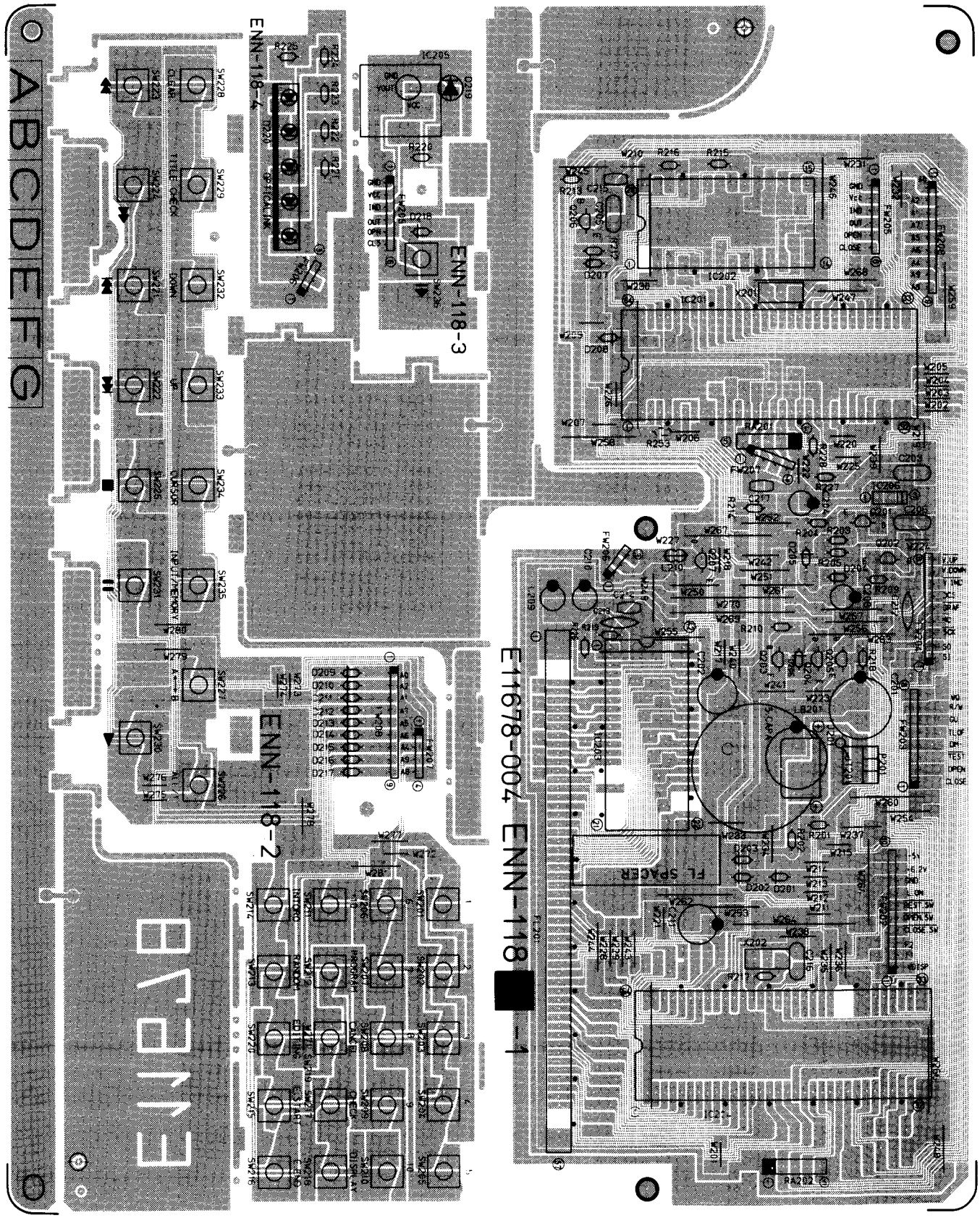
⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R657	QRD167J-103	10K	1/6W	CARBON	
	R658	QRD167J-562	5.6K	1/6W	CARBON	
	R659	QRD167J-472	4.7K	1/6W	CARBON	
	R660	QRD167J-822	8.2K	1/6W	CARBON	
	R661	QRD167J-103	10K	1/6W	CARBON	
	R701	QRD167J-753	75K	1/6W	CARBON	
	R702	QRD167J-683	68K	1/6W	CARBON	
	R703	QRD167J-104	100K	1/6W	CARBON	
	R704	QRD167J-104	100K	1/6W	CARBON	
	R706	QRD167J-105	1M	1/6W	CARBON	
	R750	QRD167J-102	1K	1/6W	CARBON	
	R751	QRD167J-181	180	1/6W	CARBON	
	R752	QRD167J-181	180	1/6W	CARBON	
	R753	QRD167J-183	18K	1/6W	CARBON	
	R754	QRD167J-333	33K	1/6W	CARBON	
	R755	QRD167J-331	330	1/6W	CARBON	
	R756	QRD167J-183	18K	1/6W	CARBON	
	R757	QRD167J-333	33K	1/6W	CARBON	
	R758	QRD167J-104	100K	1/6W	CARBON	
	R759	QRD167J-183	18K	1/6W	CARBON	
	R760	QRD167J-181	180	1/6W	CARBON	
	R801	QRD167J-394	390K	1/6W	CARBON	
	R802	QRD167J-564	560K	1/6W	CARBON	
	R803	QRD167J-123	12K	1/6W	CARBON	
	R804	QRD167J-224	220K	1/6W	CARBON	
	R805	QRD167J-562	5.6K	1/6W	CARBON	
	R806	QRD167J-392	3.9K	1/6W	CARBON	
	R808	QRD167J-103	10K	1/6W	CARBON	
	R809	QRD167J-102	1K	1/6W	CARBON	
	R810	QRD167J-471	470	1/6W	CARBON	
	R811	QRD167J-184	180K	1/6W	CARBON	
	R812	QRD167J-183	18K	1/6W	CARBON	
	R813	QRD167J-273	27K	1/6W	CARBON	
	R851	QRD167J-684	680K	1/6W	CARBON	
	R852	QRD167J-684	680K	1/6W	CARBON	
	R853	QRD167J-473	47K	1/6W	CARBON	
	R855	QRD167J-393	39K	1/6W	CARBON	
	R856	QRD167J-333	33K	1/6W	CARBON	
	R857	QRD167J-332	3.3K	1/6W	CARBON	
	R858	QRD167J-2R2	2.2	1/6W	CARBON	
	R859	QRD167J-470	47	1/6W	CARBON	
	R860	QRD167J-103	10K	1/6W	CARBON	
	RA601	QRB045J-472	4.7K	1/8W	R.NETWORK	

OTHERS

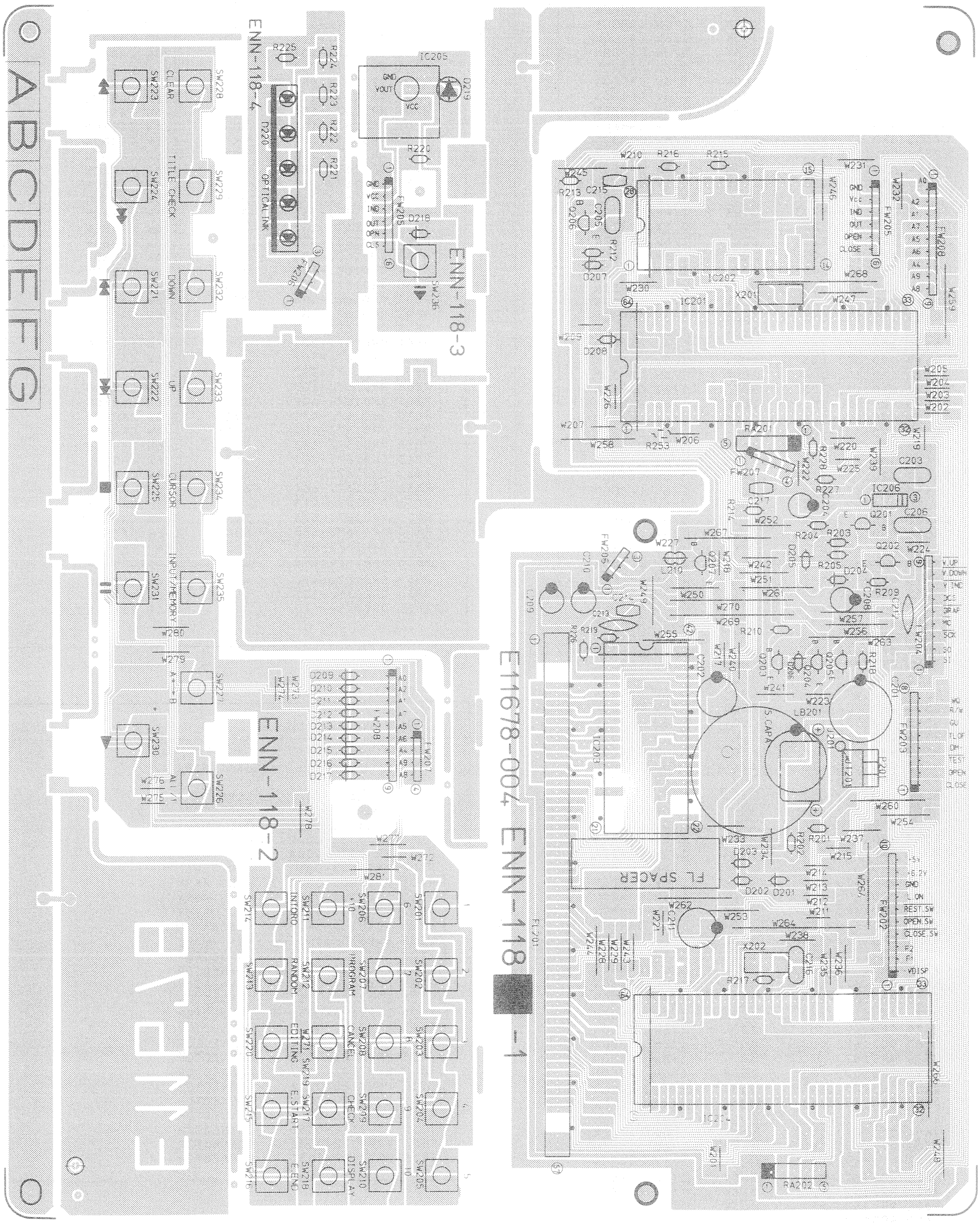
⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
		E11676-101	CIRCUIT BOARD	B
		E70306-001	HEAT SINK	
		E70859-001	EARTH PLATE	B
		SBSE3008CC	SCREW	
	L145	EQL4004-1R0	INDUCTOR	
	L401	ENZ3001-002	OSC.COIL	
	P153	QMV5005-004K	PLUG ASSY	
	P301	EMN00TV-408A	4P PIN JACK	
	P302	QMS3533-001	MINI JACK	
	P401	QMV5005-003K	PLUG ASSY	
	P501	EMV5109-010A	PLUG ASSY	
	P502	EMV5109-004A	PLUG ASSY	
	X151	ECX0169-344EF	RESONATOR	
	FW305	EWR33B-30KST	FLAT WIRE	
	JT101	EMV7122-003Z	CONNECTOR	
	JT102	EMV7122-003Z	CONNECTOR	
	JT103	EMV7122-003Z	CONNECTOR	
	JT104	EMV7122-005Z	CONNECTOR	
	JT105	EMV7122-005Z	CONNECTOR	
	JT106	EMV7122-005Z	CONNECTOR	
	JT107	EMV7122-003Z	CONNECTOR	
	JT108	EMV7122-005Z	CONNECTOR	
	JT109	EMV7122-004Z	CONNECTOR	
	JT110	EMV7122-005Z	CONNECTOR	
	JT111	EMV7122-003Z	CONNECTOR	
	JT112	EMV7122-003Z	CONNECTOR	
	JT113	EMV7122-005Z	CONNECTOR	
	JT114	EMV7122-003Z	CONNECTOR	
	JT115	EMV7122-003Z	CONNECTOR	

⚠ Safety Parts

■ ENN-118B Front PC Board Ass'y



■ ENN-118 B Front PC Board Ass'y



TRANSISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION	MAKER	AREA
	Q201	2SA1029(C,D)	SILICON	HITACHI	
	Q202	2SC458(C,D)	SILICON	HITACHI	
	Q203	DTC144ES	SILICON	ROHM	
	Q204	DTA114YS	SILICON	ROHM	
	Q205	DTA114YS	SILICON	ROHM	
	Q206	DTC144ES	SILICON	ROHM	
	Q207	DTA144ES	SILICON	ROHM	

I. C. S

⚠	ITEM	PART NUMBER	DESCRIPTION	MAKER	AREA
	IC201	UPD75108CW-207	I.C.	NEC	
	IC202	LC3564PL-15	I.C.	SANYO	
	IC203	MSC7112-01SS	I.C.	OKI	
	IC204	HD614080SC40	I.C.	HITACHI	
	IC205	GP1U501V	I.C.	SHARP	
	IC206	MN1280(P,Q)	I.C.	MATSUSHITA	

DIODES

⚠	ITEM	PART NUMBER	DESCRIPTION	MAKER	AREA
	D201	1SS133	SILICON	ROHM	
	D202	1SS133	SILICON	ROHM	
	D203	1SS133	SILICON	ROHM	
	D204	LTZ-MR15	L.E.D.	ROHM	
	D205	1SS133	SILICON	ROHM	
	D206	1SS133	SILICON	ROHM	
	D207	1SS133	SILICON	ROHM	
	D208	1SS133	SILICON	ROHM	
	D209	1SS133	SILICON	ROHM	
	D210	1SS133	SILICON	ROHM	
	D211	1SS133	SILICON	ROHM	
	D212	1SS133	SILICON	ROHM	
	D213	1SS133	SILICON	ROHM	
	D214	1SS133	SILICON	ROHM	
	D215	1SS133	SILICON	ROHM	
	D216	1SS133	SILICON	ROHM	
	D217	1SS133	SILICON	ROHM	
	D218	1SS133	SILICON	ROHM	
	D219	SLR-34VC50F124	L.E.D.	ROHM	
	D220	LD-7011VW	L.E.D.	ROHM	

CAPACITORS

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	C201	QETBOJM-228	2200MF	6.3V	ELECTRO	
	C202	QEB51EM-336	33MF	25V	LLC ELECTR	
	C203	QCZ0205-155	1.5MF	25V	CERAMIC	
	C204	QETB1AM-107	100MF	10V	ELECTRO	
	C205	QFN81HJ-103	0.01MF	50V	MYLAR	
	C206	QFN81HJ-103	0.01MF	50V	MYLAR	
	C208	QETB1CM-226	22MF	16V	ELECTRO	
	C209	QETB1HM-475	4.7MF	50V	ELECTRO	
	C210	QETB1HM-475	4.7MF	50V	ELECTRO	
	C211	QETB1VM-107	100MF	35V	ELECTRO	
	C212	QCBB1HK-331	330PF	50V	CERAMIC	
	C213	QCBB1HK-101	100PF	50V	CERAMIC	
	C214	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C215	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C216	QCZ0205-155	1.5MF	25V	CERAMIC	
	C217	QCBB1HK-471	470PF	50V	CERAMIC	

RESISTORS

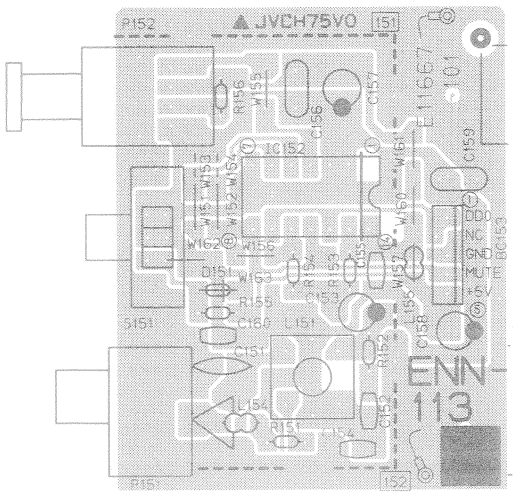
⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R201	QRD167J-103	10K	1/6W	CARBON	
	R202	QRD167J-561	560	1/6W	CARBON	
	R203	QRD167J-223	22K	1/6W	CARBON	
	R204	QRD167J-102	1K	1/6W	CARBON	
	R205	QRD167J-222	2.2K	1/6W	CARBON	
	R209	QRD167J-563	56K	1/6W	CARBON	
	R210	QRD167J-472	4.7K	1/6W	CARBON	
	R212	QRD167J-223	22K	1/6W	CARBON	
	R213	QRD167J-104	100K	1/6W	CARBON	
	R214	QRD167J-104	100K	1/6W	CARBON	
	R215	QRD167J-104	100K	1/6W	CARBON	
	R216	QRD167J-104	100K	1/6W	CARBON	
	R217	QRD167J-105	1M	1/6W	CARBON	
	R218	QRD167J-104	100K	1/6W	CARBON	
	R219	QRD167J-273	27K	1/6W	CARBON	
	R220	QRD167J-391	390	1/6W	CARBON	
	R221	QRD167J-471	470	1/6W	CARBON	
	R222	QRD167J-471	470	1/6W	CARBON	
	R223	QRD167J-471	470	1/6W	CARBON	
	R224	QRD167J-471	470	1/6W	CARBON	
	R225	QRD167J-471	470	1/6W	CARBON	
	R226	QRD167J-104	100K	1/6W	CARBON	
	R227	QRD167J-473	47K	1/6W	CARBON	
	R228	QRD167J-473	47K	1/6W	CARBON	
	R253	QRD167J-103	10K	1/6W	CARBON	
	RA201	QRB045J-473	47K	1/8W	R.NETWORK	
	RA202	QRB045J-473	47K	1/8W	R.NETWORK	

OTHERS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
		E11678-004	CIRCUIT BOARD	
		E72572-010	SPACER	
	X201	ECX0004-194KM	RESONATOR	
	X202	ECX0004-194KM	RESONATOR	
	FL201	ELU0001-050	FL TUBE	
	FW202	EWR3AB-20LST	FLAT WIRE	
	FW203	EWR38B-20LST	FLAT WIRE	
	FW204	EWR39B-20LST	FLAT WIRE	
	FW205	EWR36B-30SST	FLAT WIRE	
	FW206	EWR33B-25SST	FLAT WIRE	
	FW207	EWR34B-30SST	FLAT WIRE	
	FW208	EWR39B-30SST	FLAT WIRE	
	JT201	EMV7122-003Z	CONNECTOR	
	LB201	CR2450-FT2	BATTERY	
	SW201	ESP0001-015	TACT SWITCH	
	SW202	ESP0001-015	TACT SWITCH	
	SW203	ESP0001-015	TACT SWITCH	
	SW204	ESP0001-015	TACT SWITCH	
	SW205	ESP0001-015	TACT SWITCH	
	SW206	ESP0001-015	TACT SWITCH	
	SW207	ESP0001-015	TACT SWITCH	
	SW208	ESP0001-015	TACT SWITCH	
	SW209	ESP0001-015	TACT SWITCH	
	SW210	ESP0001-015	TACT SWITCH	
	SW211	ESP0001-015	TACT SWITCH	
	SW212	ESP0001-015	TACT SWITCH	
	SW213	ESP0001-015	TACT SWITCH	
	SW214	ESP0001-015	TACT SWITCH	
	SW215	ESP0001-015	TACT SWITCH	
	SW216	ESP0001-015	TACT SWITCH	
	SW217	ESP0001-015	TACT SWITCH	
	SW218	ESP0001-015	TACT SWITCH	
	SW219	ESP0001-015	TACT SWITCH	
	SW220	ESP0001-015	TACT SWITCH	
	SW221	ESP0001-015	TACT SWITCH	
	SW222	ESP0001-015	TACT SWITCH	
	SW223	ESP0001-015	TACT SWITCH	
	SW224	ESP0001-015	TACT SWITCH	
	SW225	ESP0001-015	TACT SWITCH	
	SW226	ESP0001-015	TACT SWITCH	
	SW227	ESP0001-015	TACT SWITCH	
	SW228	ESP0001-015	TACT SWITCH	
	SW229	ESP0001-015	TACT SWITCH	
	SW230	ESP0001-015	TACT SWITCH	
	SW231	ESP0001-015	TACT SWITCH	
	SW232	ESP0001-015	TACT SWITCH	
	SW233	ESP0001-015	TACT SWITCH	
	SW234	ESP0001-015	TACT SWITCH	
	SW235	ESP0001-015	TACT SWITCH	
	SW236	ESP0001-016	TACT SWITCH	

⚠ Safety Parts

■ ENN-113[D] Digital Out Module PC Board Ass'y



I. C. S

⚠	ITEM	PART NUMBER	DESCRIPTION		AREA
				MAKER	
	IC152	TC74HC02P	I.C.	TOSHIBA	

DIODES

⚠	ITEM	PART NUMBER	DESCRIPTION		AREA
				MAKER	
	D151	1SS133	SILICON	ROHM	

CAPACITORS

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	C151	QCF21HP-223	0.022MF	50V	CERAMIC	
	C152	QCSB1HJ-330	33PF	50V	CERAMIC	
	C153	QETB1CM-476	47MF	16V	ELECTRO	
	C154	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C155	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C156	QFV81HJ-104	0.1MF	50V	T.FILM	
	C157	QETB1AM-107	100MF	10V	ELECTRO	
	C158	QETB1CM-476	47MF	16V	ELECTRO	
	C159	QCHB1EZ-223	0.022MF	25V	CERAMIC	

RESISTORS

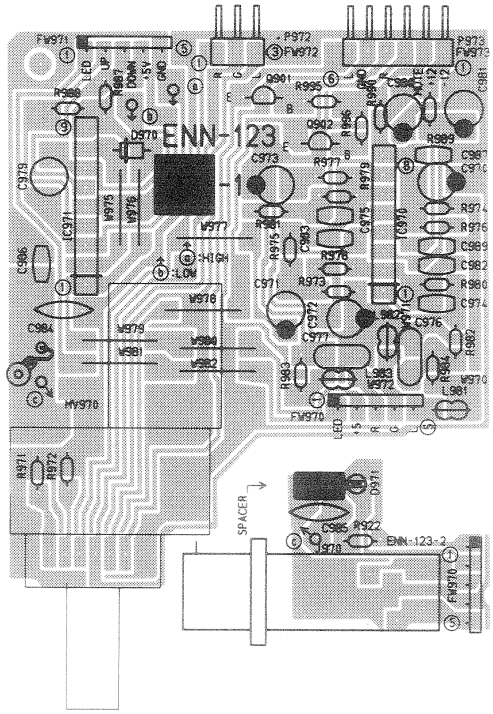
⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R151	QRD167J-750	75	1/6W	CARBON	
	R152	QRD167J-100	10	1/6W	CARBON	
	R153	QRD167J-181	180	1/6W	CARBON	
	R154	QRD167J-181	180	1/6W	CARBON	
	R155	QRD167J-472	4.7K	1/6W	CARBON	
	R156	QRD167J-822	8.2K	1/6W	CARBON	

OTHERS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
		E11667-101	CIRCUIT BOARD	
		E74741-001	SHEILD BRACKET	
	L151	ENZ3003-001	COIL	
	L154	EQL4004-R39	INDUCTOR	
	P151	EMN00TV-104A	1P PIN JACK	
	P152	TOTX172	JACK	
	S151	QSS1F22-E01	SLIDE SWITCH	
	BC153	EWS014-139H	SOCKET WIRE	
		VJA7135	OPTICAL JACK CAP	

⚠ Safety parts

■ ENN-123[A] Headphone PC Board Ass'y



I. C. S

⚠	ITEM	PART NUMBER	DESCRIPTION		AREA
				MAKER	
	IC970	M5218L	I.C.	MITSUBISHI	
	IC971	M54543L	I.C.	MITSUBISHI	

DIODES

⚠	ITEM	PART NUMBER	DESCRIPTION		AREA
				MAKER	
	D970	ERA15-02L19	SILICON	KYODO DENKI	
	D971	SLH-56VC32	L.E.D.	ROHM	

CAPACITORS

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	C970	QEK61HM-475	4.7MF	50V	ELECTRO	
	C971	QETB1HM-475	4.7MF	50V	ELECTRO	
	C972	QETB1CM-226	22MF	16V	ELECTRO	
	C973	QETB1CM-226	22MF	16V	ELECTRO	
	C974	QCBB1HK-471	470PF	50V	CERAMIC	
	C975	QCBB1HK-471	470PF	50V	CERAMIC	
	C976	QFN81HJ-103	0.01MF	50V	MYLAR	
	C977	QFN81HJ-103	0.01MF	50V	MYLAR	
	C979	QEN51HM-475	4.7MF	50V	NON POLE	
	C980	QETB1CM-476	47MF	16V	ELECTRO	
	C981	QEK61EM-476	47MF	25V	ELECTRO	
	C982	QCSB1HJ-680	68PF	50V	CERAMIC	
	C983	QCSB1HJ-680	68PF	50V	CERAMIC	
	C984	QCF21HP-223	0.022MF	50V	CERAMIC	
	C986	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C987	QCHB1EZ-223	0.022MF	25V	CERAMIC	
	C989	QCHB1EZ-223	0.022MF	25V	CERAMIC	

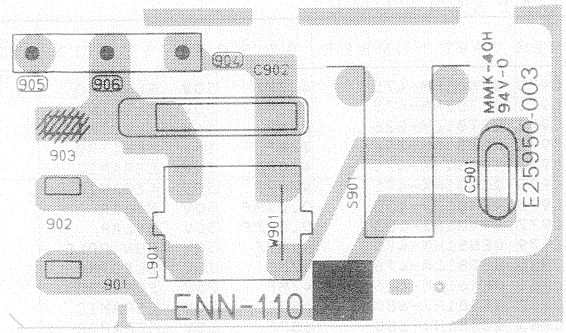
RESISTORS

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	R922	QRD167J-391	390	1/6W	CARBON	
	R971	QRD167J-151	150	1/6W	CARBON	
	R972	QRD167J-151	150	1/6W	CARBON	
	R973	QRD167J-473	47K	1/6W	CARBON	
	R974	QRD167J-473	47K	1/6W	CARBON	
	R975	QRD167J-272	2.7K	1/6W	CARBON	
	R976	QRD167J-272	2.7K	1/6W	CARBON	
	R977	QRD167J-272	2.7K	1/6W	CARBON	
	R978	QRD167J-272	2.7K	1/6W	CARBON	
	R979	QRD167J-562	5.6K	1/6W	CARBON	
	R980	QRD167J-562	5.6K	1/6W	CARBON	
	R981	QRD167J-680	68	1/6W	CARBON	
	R982	QRD167J-680	68	1/6W	CARBON	
	R983	QRD167J-390	39	1/6W	CARBON	
	R984	QRD167J-390	39	1/6W	CARBON	
	R987	QRD167J-103	10K	1/6W	CARBON	
	R988	QRD167J-103	10K	1/6W	CARBON	
	R989	QRD167J-221	220	1/6W	CARBON	
	R990	QRD167J-221	220	1/6W	CARBON	

OTHERS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
		EWT011-098	TERMINAL WIRE	
		EX0007005N60S	SPACER	
		E11723-002	CIRCUIT BOARD	
		E73792-004	BRACKET	A
	J970	QMS6302-131	HEADPHONE JACK	
	L981	EQL4004-1R0	INDUCTOR	
	L982	EQL4004-1R0	INDUCTOR	
	L983	EQL4004-1R0	INDUCTOR	
	P972	EMV7112-003	CONNECTOR	
	FW970	EWR35B-13SST	FLAT WIRE	
	FW971	EWR35B-16LST	FLAT WIRE	
	FW973	EWR36B-20LST	FLAT WIRE	
	MV970	QVJB94B-E24B	V.RESISTOR	

■ ENN-110□ Primary PC Board Ass'y



Note (2)

PC Board Ass'y	Designated Areas
ENN-110 B	the U.S.A.,Canada,
ENN-110 C	West Germany, Europe, Australia
ENN-110 D BS	the U.K.
ENN-110 E	U.S.Military Market, Other Countries

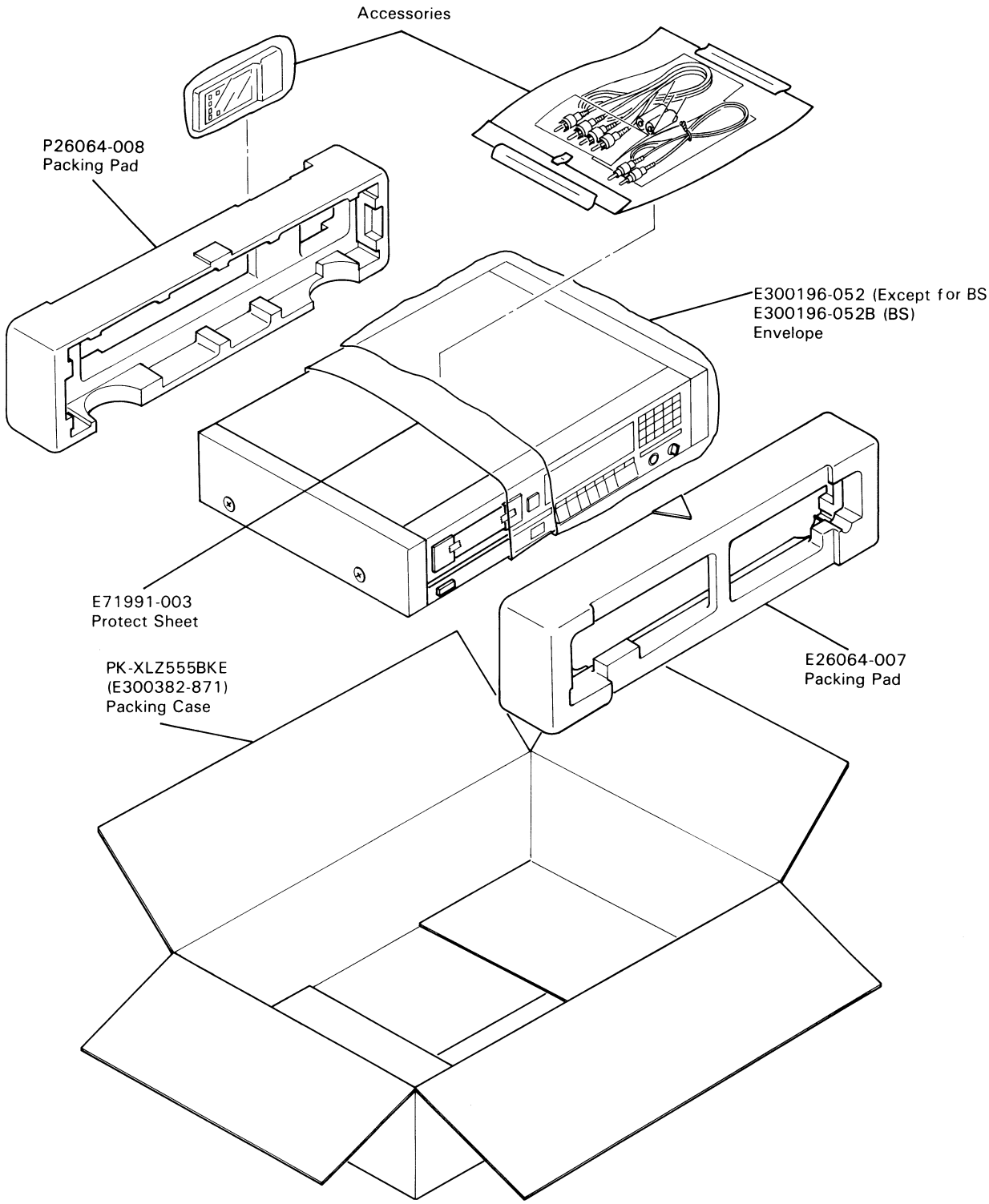
CAPACITORS

⚠	ITEM	PART NUMBER	DESCRIPTION			AREA
	C901	QCZ9018-103	0.01MF		CERAMIC	E
	C901	QCZ9038-103	0.01MF		CERAMIC	B
	C901	QCZ9038-103	0.01MF		CERAMIC	C
	C901	QCZ9038-103BS	0.01MF		CERAMIC	DBS
	C902	QFZ9010-223	0.022MF	250V	M.PAPER	C
	C902	QFZ9019-223	0.022MF		M.MYLAR	B
	C902	QFZ9020-223	0.022MF		M.MYLAR	E
	C902	QFZ9020-223BS	0.022MF		M.MYLAR	DBS

OTHERS

⚠	ITEM	PART NUMBER	DESCRIPTION	AREA
		E25950-003	CIRCUIT BOARD	B
		E25950-003	CIRCUIT BOARD	C
		E25950-003	CIRCUIT BOARD	E
		E25950-003BS	CIRCUIT BOARD	DBS
		E65508-002	TAB	
		E67764-203	WRAPPING TERMINAL	
		QSP4C11-E01	PUSH SWITCH	B
		QSP4C11-E01	PUSH SWITCH	C
		QSP4C11-E01	PUSH SWITCH	E
		QSP4C11-E01BS	PUSH SWITCH	DBS
	L901	ENZ5002-005	FILTER	B
	L901	ENZ5002-005	FILTER	C
	L901	ENZ5002-005	FILTER	E
	L901	ENZ5002-005BS	LINE FILTER	DBS

Packing Materials and Part Numbers



The Marks for Designated Areas

J····· the U.S.A.
C·····Canada
E ·····Europe
A·····Australia
G·····West Germany
ES·····Spain
BS····· the U.K.
P,PG·····U.S.Military Market
U·····Other Countries
No mark indicates all areas.

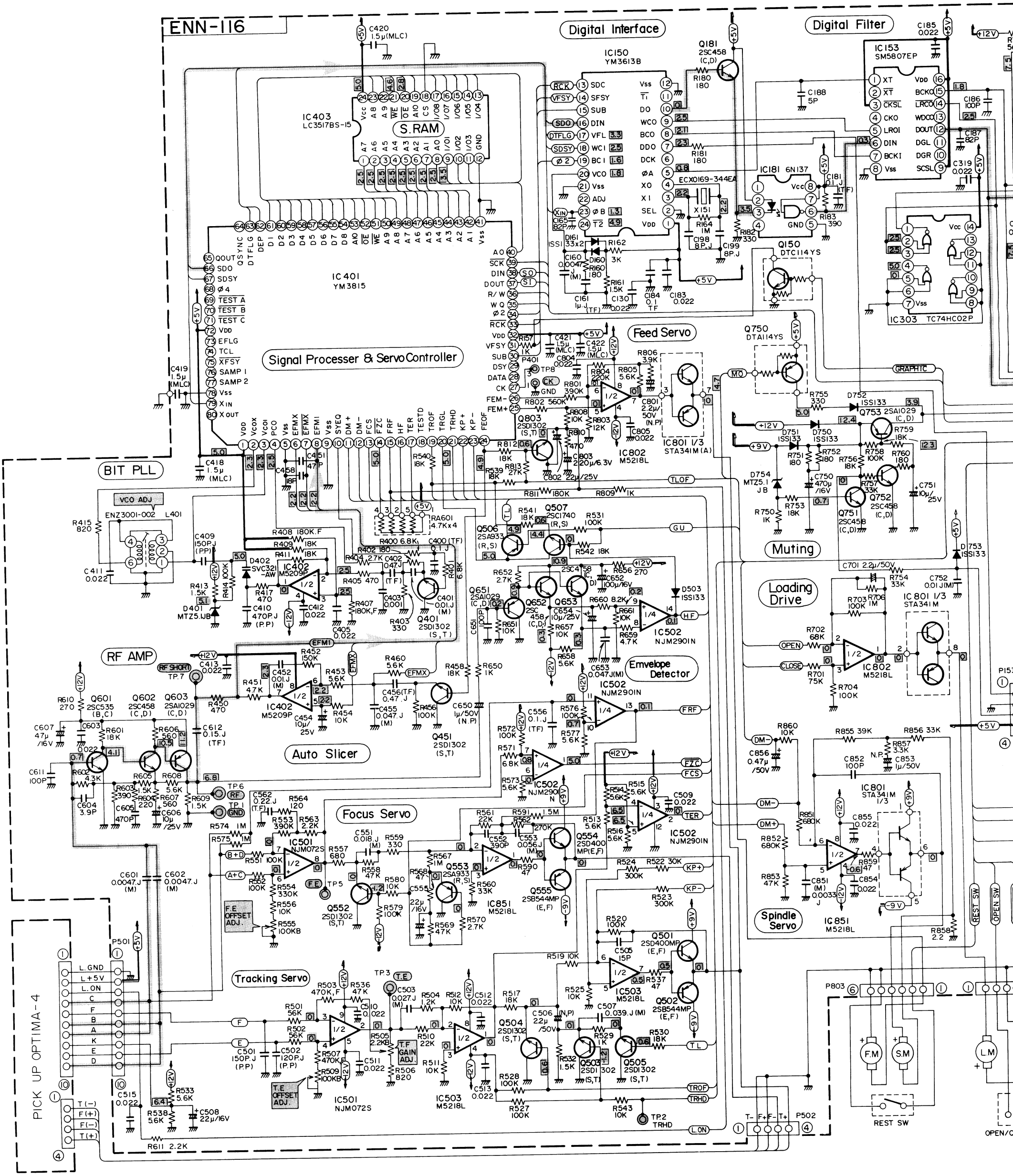
Accessories List

⚠	Parts Number	Parts Name	Q'ty	Description	Areas
	EWP302-011	SIGNAL CORD	1	FOR OUTPUT	
	EWP805-001	1P PLUG CORD	1	FOR DCS	
	RM-SX555U	REMOTE CONTROL UNIT	1		
	UM-3(DJ)-2PSA	BATTERY	1		
	E30580-1476A	INSTRUCTION BOOK	1		J
	E30580-1483A	INSTRUCTION BOOK	1		A,C,E,G,P,PG,U
	E30580-1483ABS	INSTRUCTION BOOK	1		BS
	E43486-340A	SAFETY SHEET	1		BS
	BT20044E	SAFETY INSTRUCTION SHEET	1		J
	E35497-017	CAUTION SHEET	1		P
	E35497-019	CAUTION SHEET	1		PG,U
	BT20047C	WARRANTY CARD	1		J,P,PG
	BT20025K	WARRANTY CARD	1		C
	BT20029C	WARRANTY CARD	1		A
	BT20098	WARRANTY CARD	1	NEW ZEALAND	A
	BT20060	WARRANTY CARD	1		BS
	BT20064A	WARRANTY CARD	1		G
	BT20046C	SERVICE INFORMATION	1		J,P,PG
	BT20071A	SERVICE CENTRE LIST	1		C
	BT20066	EEC AGENCY	1		BS,G
	E74737-001	KEEPING SERIAL LABEL	2		J
	E66416-003	ENVELOPE	1	FOR WARRANTY CARD	J
	E300196-010	ENVELOPE	1		EXCEPT BS
	E300196-010B	ENVELOPE	1		BS
⚠	E04056	SIEMENS PLUG	1		PG,U

The Marks for Designated Areas

J..... the U.S.A.
C.....Canada
E .....Europe
A.....Australia
G.....West Germany
ES.....Spain
BS..... the U.K.
P,PG.....U.S.Military Market
U.....Other Countries
No mark indicates all areas.

Schematic Diagram



Digital Filter
D/A Converter
L ch
R ch
Low Pass Filter
Mute
Deglitcher
Deemphasis
Muting
Loading Drive
Spindle Servo
POWER SUPPLY
ENN-118-1
ENN-113
ENN-123-1
ENN-110B
FRONT P.C.B.
Head Phone P.C.B.
POWER TRANSFORMER
REST SW
OPEN/CLOSE SW
F.M
S.M
L.M
COMPU LINK

J (for U.S.A)
C (for Canada)

POWER SUPPLY BLOCK
(Other areas: Refer to SHEET2)

	G	Other Areas
* C101 C102	0.1μF TF. CAPA	0.022μF C. CAPA

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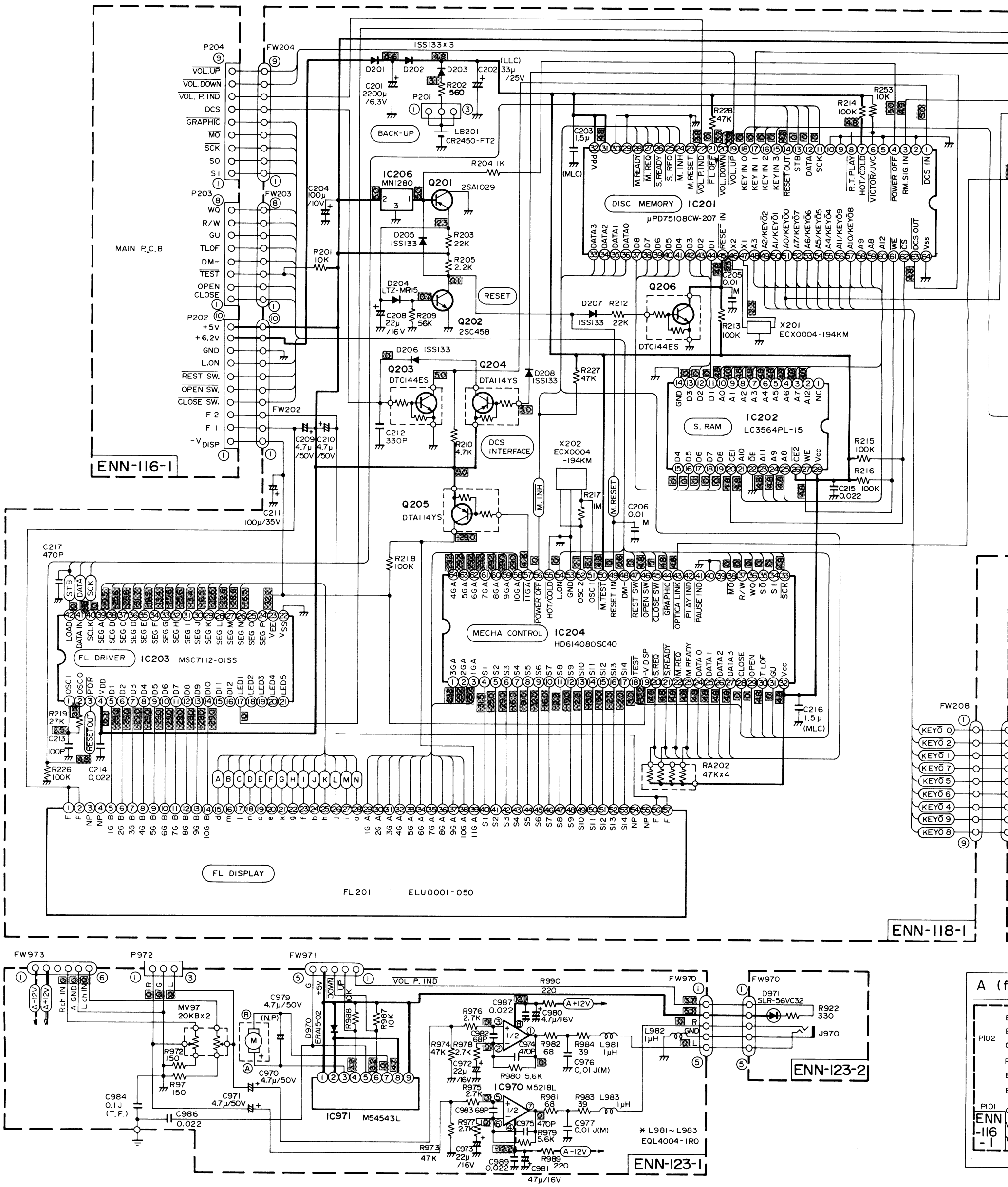
MAIN P.C.B
ENN-116-1
P204
FW204
VOL.UP
VOL.DOWN
VOL.P.IND
DCS
GRAPHIC
MO
SCK
SO
SI
P203
FW203
WQ
R/W
GU
TLOF
DM-
TEST
OPEN
CLOSE
P202
+5V
+6.2V
GND
L.ON
REST SW.
OPEN SW.
CLOSE SW.
F 2
F 1
-VDISP
FW202
ISS133×3
D201
D202
D203
C202 33μ /25V (LLC)
C201 2200μ /6.3V
R202 560
P201
BACK-UP
LB201 CR2450-FT2
R204 1K
IC206 MN1280
Q201 2SA1029
C204 100μ /10V
R201 10K
D205 ISS133
R203 22K
R205 2.2K
D204 LTZ-MR15
C208 22μ /16V
R209 56K
Q202 2SC458
RESET
D206 ISS133
Q203 DTC144ES
Q204 DTA114YS
D208 ISS133
C212 330P
R210 4.7K
DCS INTERFACE
C209 4.7μ /50V
C210 4.7μ /50V
C211 100μ/35V
Q205 DTA114YS
M.INH
M.RESET
X202 ECX0004 -194KM
R217 1M
C206 0.01 M
R218 100K
C217 470P
STB
DATA
SCK
FL DRIVER
IC203 MSC7112-01SS
R219 27K
C213 100P
RESET OUT
C214 0.022
R226 100K
C203 1.5μ (MLC)
R228 47K
R253 10K
R214 100K
DISC MEMORY
IC201
μPD75108CW-207
C205 0.01 M
Q206
D207 ISS133
R212 22K
DTC144ES
R213 100K
X201 ECX0004-194KM
R227 47K
S. RAM
IC202 LC3564PL-15
R215 100K
R216 100K
C215 0.022
MECHA CONTROL
IC204 HD614080SC40
C216 1.5μ (MLC)
RA202 47K×4
FW208
KEYŌ 0
KEYŌ 2
KEYŌ 1
KEYŌ 7
KEYŌ 5
KEYŌ 6
KEYŌ 4
KEYŌ 9
KEYŌ 8
FL DISPLAY
FL201 ELU0001-050
ENN-118-1
FW973
P972
FW971
A-12V
A+12V
A GND
Rch IN
L ch IN
R
G
L
MV97 20KBx2
R972 150
R971 150
C984 0.1J (T.F.)
C986 0.022
C979 4.7μ/50V
(N.P)
C970 4.7μ/50V
C971 4.7μ/50V
D970 ERA15-02
+5V
DOWN
UP
OK
R988
R987 10K
IC971 M54543L
VOL P. IND
R990 220
C987 0.022
C980 4.7μ/16V
R976 2.7K
C982 68P
R974 47K
R978 2.7K
C972 22μ /16V
R980 5.6K
C974 470P
R982 68
R984 39
L981 1μH
C976 0.01 J(M)
IC970 M5218L
R975 2.7K
C983 68P
R977 2.7K
C973 22μ /16V
R973 47K
C975 470P
R981 68
R983 39
L983 1μH
C977 0.01 J(M)
R979 5.6K
C989 0.022
R989 220
C981 47μ/16V
* L981~L983 EQL4004-1R0
L982 1μH
FW970
D971 SLR-56VC32
R922 330
J970
ENN-123-2
ENN-123-1
A (f
P102
P101
ENN -116 -1

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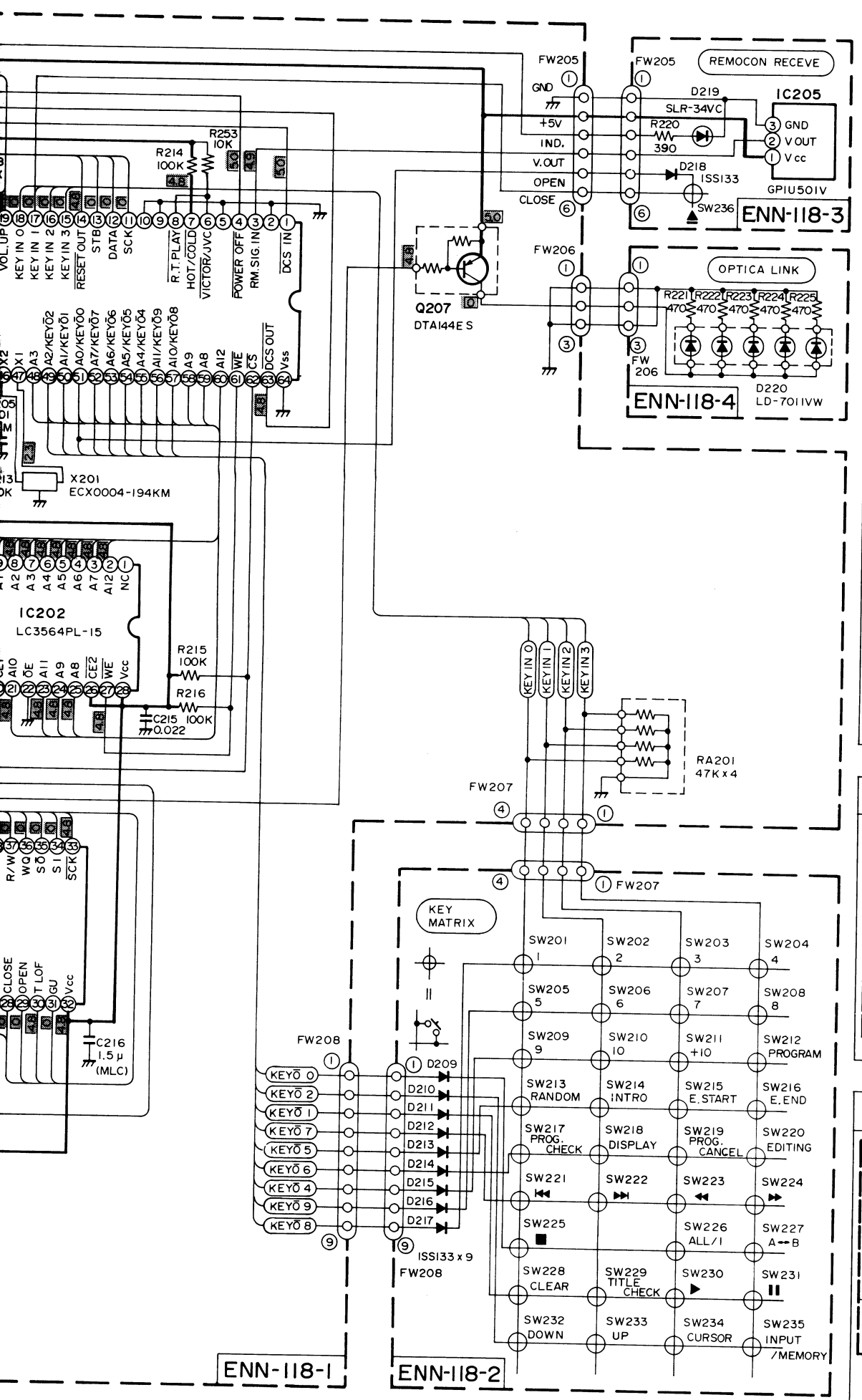
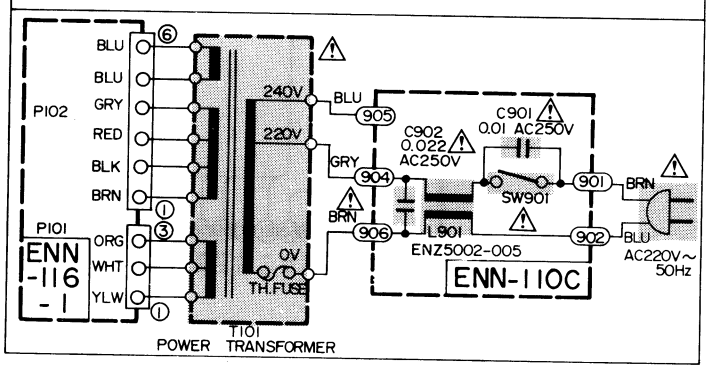
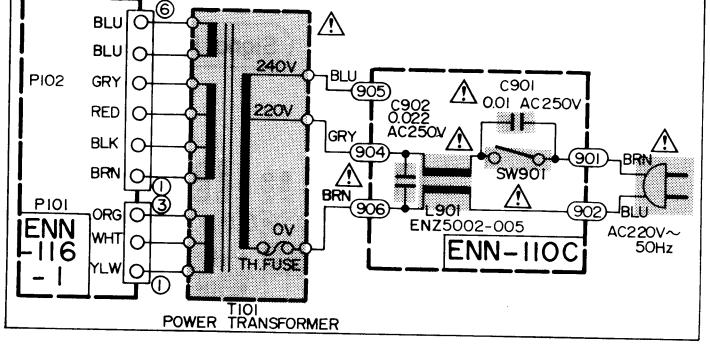


POWER SUPPLY BLOCK

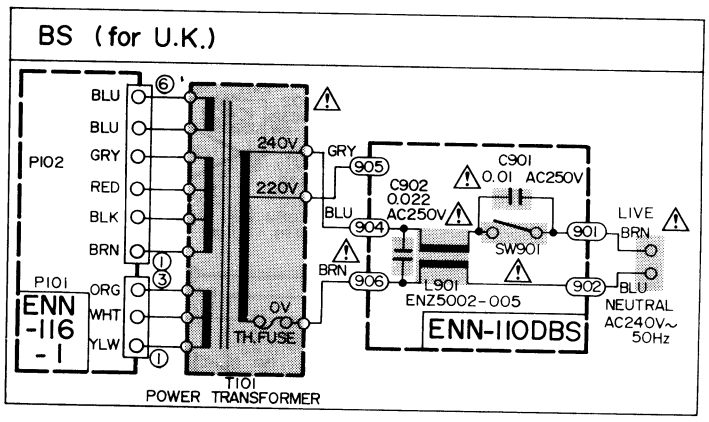
E (for Continental Europe)



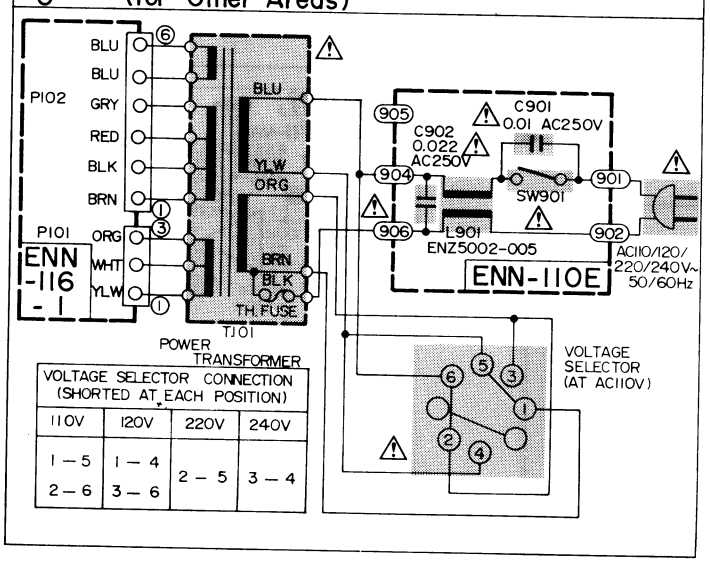
G (for West Germany)



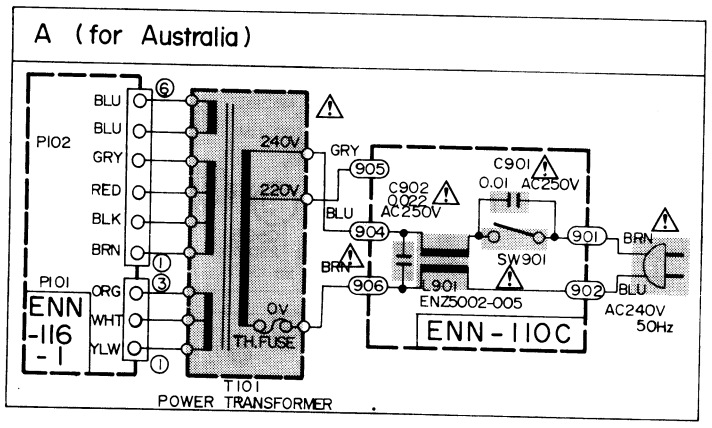
BS (for U.K.)



P, PG (for U.S. Military Market)
U (for Other Areas)



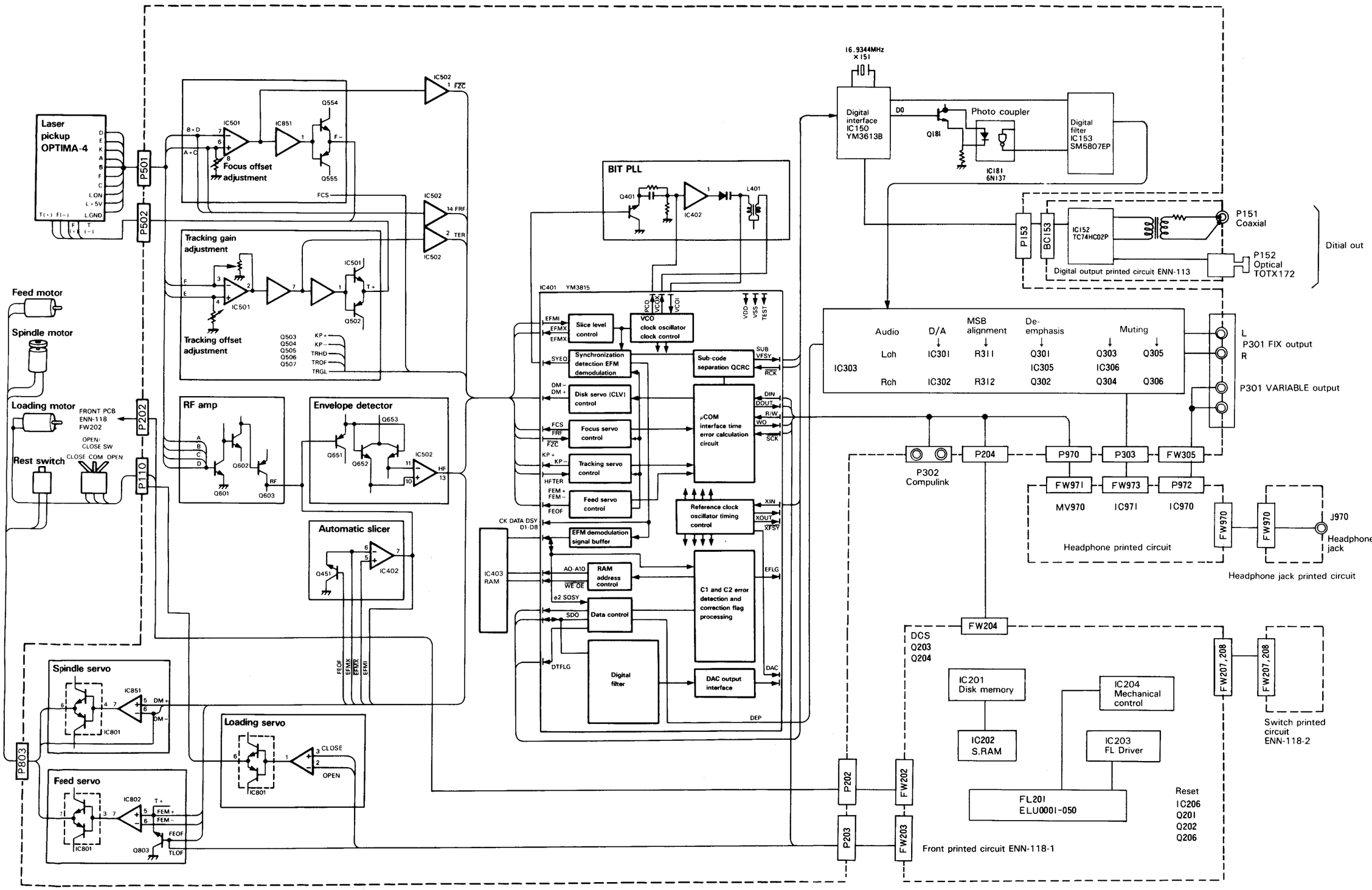
A (for Australia)



Notes:

1. ▒▒ shows DC voltage to the chassis with no signal input.
2. ——— indicates positive B power supply.
3. ------- indicates negative B power supply.
4. ▒▒ indicates signal path.
5. When replacing the parts in the darkened area (▒▒) and those marked with ⚠, be sure to use the designated parts to ensure safety.
6. This is the standard circuit diagram. The design and contents are subject to change without notice.

Block Diagram



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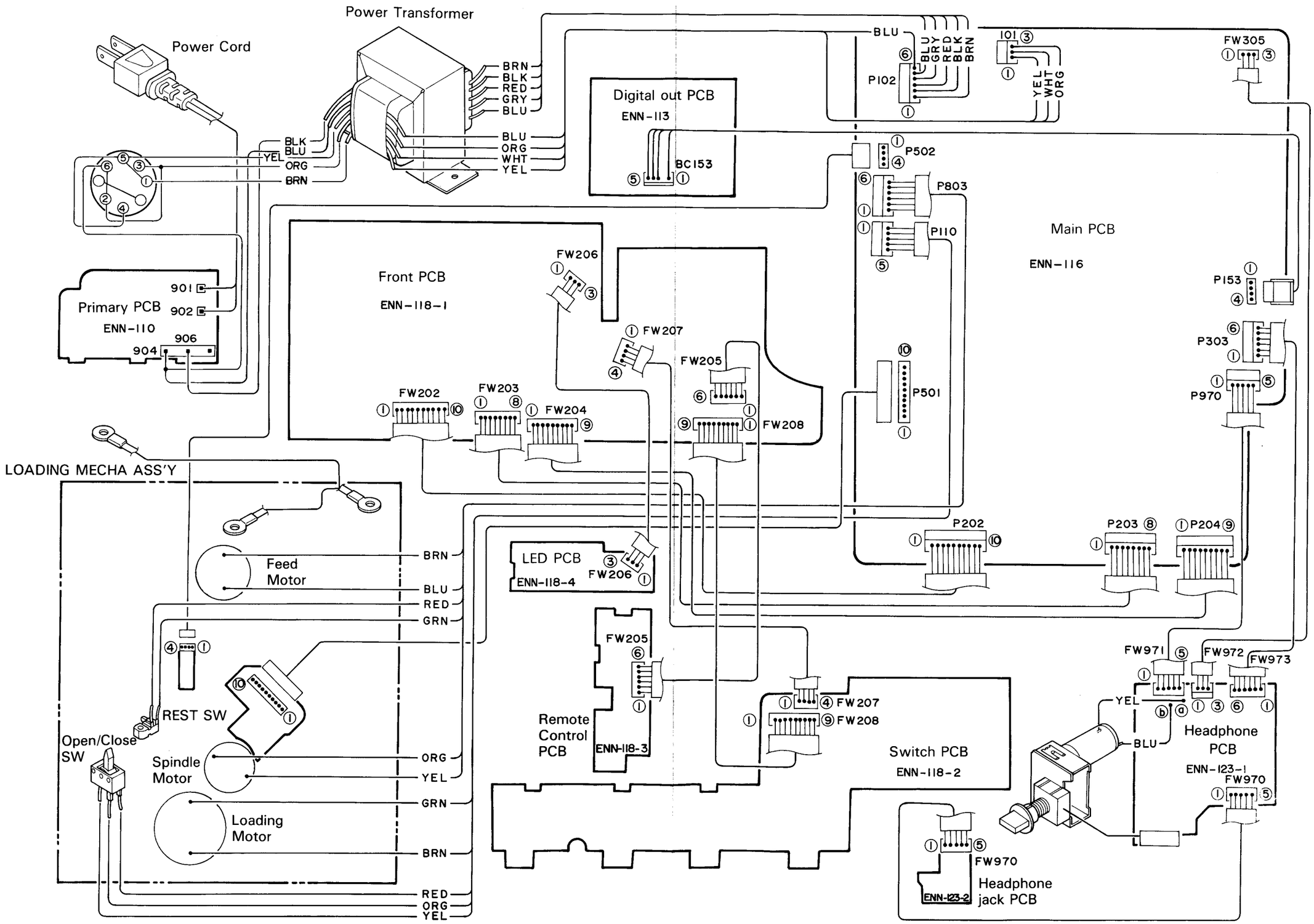
Connection Diagram



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